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The Association of American Geographers
Phyllis R. Griess, Editor

Volume XII March 1960 Number 2

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THE PROFESSIONAL GEOGRAPHER

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A DIAGRAM FOR DEMONSTRATING CERTAIN CONCEPTS IN ECONOMIC CROP GEOGRAPHY

George Blyn

Villanova University

THE PURPOSE of this article is to demonstrate by means of a diagram certain of the concepts used to describe and analyze the geography of crop production. The concepts are: the physical limits, the extensive economic margin or economic limits, the economically optimum area of crop production, the margin of transference between crops, the effect of competing crops on actual land use, the effect of distance from market on farm income, and the dynamic nature of these concepts in economic geography.

The accompanying diagram gives hypothetical figures, in dollars per acre, for gross income and costs along a cross section from the Rocky Mountains to the East Coast. The eastern foot of the mountains is assumed to be at point A and the coast at point O. The dollar amounts per acre at every point along the cross section are read according to the vertical scale on the right. The curved lines show gross income, a product of the crop's physical yield per acre and price on the farm for the crop. Production costs for each crop are assumed to be the same at every point along the cross section and are represented by horizontal lines; such costs depend primarily on labor, machine use, and seed. The solid lines relate to cotton and the dash lines to wheat. Net farm income is the difference between income and cost lines.

The smoothness of the lines conceals a host of irregularities which would result from use of actual data. A number of assumptions are made to maintain simplicity. The quality of the commodity is assumed to be the same at all possible production points; farm price is thus not influenced by quality. No fertilizer or irrigation is used and the technology of cultivation is assumed the same throughout. The income line thus reflects only two large variables: the physical yield per acre, which varies with the quality of natural resources at each point, and farm price per physical unit, which depends on the market price and cost of transportation to market. Terrain is assumed suitable for the technology applied; the Appalachians and the Ozarks have been smoothed away!

With these assumptions the horizontality of the cost lines does not appear as too unreasonable. Plowing, sowing, cultivating, and harvesting costs would not differ greatly, although all would depend on the amount of the crop processed. The considerable difference in production costs per acre for the two crops has some correspondence to actuality. A more complicated model would show production costs per acre as greater where land was more productive. Such land would be used more intensively than less productive land. If the cost lines were to reflect this, then the income lines would have to show greater yield per acre where the land was used more intensively.

The physical limits of wheat production are at B and M; dollar income from the crop would be zero at these points because the yield per acre there would be zero. In the East the limit is presumed to be set by infertile soil on the coastal plain. In the West, although soil would be suitable, the point is reached where rainfall is inadequate for the crop. The physical limits of cotton are at N in the East, also set by the soil factor, and at D in the West, where the growing season is probably too short.

The economic limits, or extensive economic margin, would not be as broad as

the physical limits for either crop. The geography of actual production would tend to be bounded by points C and K for wheat, and points E and L for cotton. At these points gross income just equals production costs. Outward from these points costs exceed income.

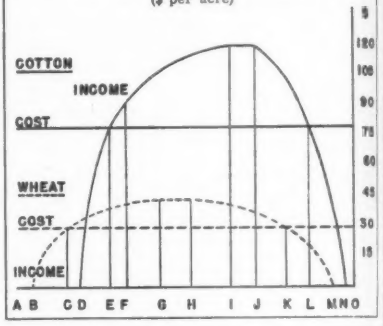
The area with optimum physical conditions for production of each crop is not specifically shown, but the optimum economic area, where income is in greatest excess over costs, is between G and H for wheat, I and J for cotton. West of these areas income declines, partly because of less favorable natural conditions, and partly because farm prices decline with the increase in distance and cost of transportation to the major markets in the East and in Western Europe.

Although the area between G and H is economically optimum for wheat, it is not likely to be found in wheat production. Cotton production is a competing use for the land. This land does not have the optimum conditions for cotton production, but net income is higher here when the land is used for cotton rather than wheat. Cotton would be grown as far west as F. The point F is the margin of transference between the two crops; it is equally profitable to grow either crop there.

The dynamic nature of economic geography may be appreciated when it is seen that none of these points necessarily remains fixed over time. An increase in market demand could raise farm prices all along the line. The income curves would rise higher and the limiting economic points would be pushed outward. A cut in transportation costs would have a similar effect, although it would probably be greater for places farther from the major markets. There would, in this case too, be a relocation of the economic margins or economic limits. A cost reducing improvement in production would lower the horizontal lines and have the same effect on the margins.

The physical limits so far remain unchanged. But they may be affected by other factors. An improved seed capable of growing in hitherto unusable soil, or with less moisture, or with a shorter growing season could push out these limits and perhaps also raise the yield per acre and income all along the line. In a more complicated model, profitable irrigation would have an important effect on the physical limits.

POTENTIAL GROSS INCOME AND PRODUCTION COSTS FOR COTTON AND WHEAT ALONG A CROSS SECTION FROM THE ROCKY MOUNTAINS TO THE EAST COAST ABOUT THE LATITUDE OF SOUTHERN TENNESSEE
($ per acre)



The significance of physical limits in a study of the actual crop geography may be questioned. At any given time the crop will tend to be found in production only as far out as the economic margins. It would be expected that any production outside these limits would be relatively short-lived; the producers, at least those who are economically rational, would shift elsewhere as soon as they were able, or to other use for their land. To the extent that the physical limits are relatively stable they would point out the potential area of crop production, but these limits would never be reached because costs would never fall to zero. Since the physical limits do change they neither indicate the actual geography of crop production nor the potential area of production in the future.

The emphasis in the above approach is on the net effect of all economic influences on crop geography. Everything that affects income and cost also affects the geography. All factors which affect the actual geography are economic factors. The natural conditions of the physical environment are not a factor separate from the economic factors. Natural resources are the land factor in the tri-fold classification of productive factors by economics. The productivity of the land, along with that of labor and capital, and the technology available, deter-

mine the physical yield per acre and thereby influence the dollar income per acre.

There are, however, circumstances in which the economic influence on the geography of crop production would not follow as above. In the case of national emergencies cultivation may be extended into formerly submarginal land. The device for promoting this in some countries would be higher prices or subsidies to defray costs. In parts of the world where subsistence agriculture prevails, world market prices would have no bearing on economic decisions. In such lands tradition may be the immediate determinant of where crops are grown. Behind tradition there could still be a kind of economic rationality which leads crops to be grown where returns from cultivation at least equal the worth of effort and other inputs necessary to obtain the crops. The balancing of these considerations in a non-market economy may be expected to be inexact, and consequently there may be on this account much economic irrationality in the geography of production. It could also well be that there was a subsequent change in conditions which once gave rationality to what later became tradition. But subsistence agriculture does not necessarily mean economically irrational agriculture.

AN INDEX OF CROP DIVERSIFICATION

Shyam S. Bhatia

Delhi University, India

THE PURPOSE of this article is to present a quantitative method for the measurement of crop diversification. This method was developed during a study of the regional agricultural patterns of India and seems capable of wider application.

In India, due to the general absence of livestock enterprises, cultivation of crops occupies a dominant position in agriculture. The latitudinal position and physical controls give a 12-months growing season over a major portion of the country and thereby permit the cultivation of a wide variety of crops suitable for different periods of the year. The cultivation of crops in most parts of India is, in fact, limited only by available moisture.

In those parts of India where rainfall is heavy, rice prevails almost to the exclusion of other crops, occupying six to ten times the area devoted to the next ranking crop. In those parts where rainfall is limited, the dry crops, such as bajra (a millet) and jowar (sorghum), predominate as they are the only crops that can thrive under prevailing conditions. Over large portions of the country that lie between the two extremes noted above, the seasonal nature of monsoon rainfall necessitates adjustments by way of cultivating a variety of crops. The number of crops grown in such areas is large, and each of these crops occupies a small proportion of the cultivated area. Hence there is a lack of crop specialization or, conversely, crop diversification is a characteristic feature of these regions – a point supported by the fact that over a considerable portion of India, the leading crop occupies less than 30 per cent of the cultivated area.

For the areal differentiation of variations in crop diversification on a quantitative basis, an index of crop diversification was developed. The index takes into account (a) number of crops grown, and (b) percentage of cultivated area under different crops. A study of the crop statistics (*1*) of India shows that, in most districts, the number of crops grown ranges from two to ten. Assuming that the largest number of crops produced in a district is ten, each crop, theoretically speaking, occupies ten

per cent of the cultivated area if all crops are uniformly distributed. In such a case, crop diversification is great.

The above assumption is used as a basis for determining the degree of crop diversification. All crops that individually occupy ten per cent or more of the cultivated area in a district are considered. The larger the number of crops that occupy more than ten per cent of the cultivated area in a district, and the closer the value of each such crop to ten per cent, the higher the degree of crop diversification. For example, if, in district A, six crops occupy 36, 24, 16, 12, 8, and 3 per cent of the cultivated area, and, in district B, four crops occupy 65, 23, 8, and 4 per cent of the cultivated area, there is a higher degree of crop diversification in district A and a higher degree of crop specialization in district B. For a quantitative measurement, the index is calculated as below:

$$\text{Index of crop diversification} = \frac{\text{Per cent of cultivated area under x crops}}{\text{Number of x crops}}$$

where x crops are those crops which individually occupy ten per cent or more of cultivated area in a district. The lower the value of the index, the higher the degree of crop diversification. The value of the index, however, cannot be less than ten. In the above example, district A has an index value of 36+24+16+12 divided by 4, or 22; and district B has an index value of 65 + 23 divided by 2, or 44. District A has a much higher crop diversification than district B.

The index of diversification was calculated for each district of India, the values were arrayed, and quartiles were determined to distinguish four categories, namely, very high diversification, high diversification, little diversification, and very little diversification. A map (*2*) based on these four categories brings out the regional contrasts in crop diversification. A comparison of the distribution of very high crop diversification, with the distribution of areas where the leading crop occupies less than 30 per cent of the cultivated area, shows a rather close correlation. The nature of this association was subjected to statistical investigation, and the percentage of cultivated area under the leading crop (where it occupies less than 30 per cent of cultivated area) was correlated with the corresponding value of the index of diversification. The Pearsonian Coefficient of Correlation was found to be .7246 and was highly significant ($p = .01$).

The index described above seems to be a useful tool in the analysis of regional agricultural patterns in India. Possibly it can be employed for the measurement of spatial variations in diversification or specialization of agricultural activities in other parts of the world as well.

° ° °

(*1*) *Indian Agricultural Statistics, 1950-51 and 1951-52, Volume II,* Government of India, Economic and Statistical Adviser, Ministry of Food and Agriculture, Delhi, 1957.

(*2*) Bhatia, S. S., *Analysis of the Regional Agricultural Patterns of India,* unpublished Ph.D. dissertation, Department of Geography, University of Kansas, Lawrence, 1959, Figure 13.

GEOGRAPHY – A PROBLEM IN NOMENCLATURE

Kenneth Thompson

University of California, Davis

HAVING LONG BEEN unhappy with both the connotation and etymology of the term geography as applied to the academic discipline, I find myself in thorough agreement with Alexander's recent suggestion that the field be renamed. (*1*) As that writer observed, geography no longer connotes concepts basic to the field. I would go even further and declare that, to non-geographers, the term almost invariably evokes a grossly inaccurate, and often unfavorable, image of the field. The objectives

of academic geographers are not understood by the public, or even by their colleagues. An important reason appears to be the inherent inadequacy of the term geography. I am therefore glad to support the proposal for a change of name, and herein attempt to formulate the major objections to the term and propose a possible alternative.

Criticism of the term geography can be directed along several lines. One objection concerns its derivation from the Greek *gaia, ge* (earth) + *graphe* (description). Geography thus finds itself in the anomalous position as one of the few organized fields of study that declares itself nominally to be descriptive. Where is the *logos* in geographical study? It can be argued, if not very seriously, that the study performed by geographers might well be named geology. The synoptic view of geographers perhaps gives them better claim to this title than the more narrowly oriented geologist, but it seems unlikely that geologists will surrender their title at this late date on grounds merely of doubtful semantic justice.

The principal case against the word geography, however, rests on its ambiguity and misleading character. It is not intended here to attack the hydra of geographical semantics; it is sufficient merely to indicate the broad areas of meaning attributed to the term geography. At the lower levels of abstraction, geography may be correctly defined in three importantly different basic ways. Essentially, these state that geography is: (1) the sum total of natural features in an area, (2) a book devoted to the natural and cultural features of an area, (3) the science of the earth and its life. (2)

The first two definitions are used mainly in common parlance, and here we need only note their confusing existence. The third definition has to do with academic geography, and is so broadly phrased that it is not much of a definition at all. Such vagueness on the part of the lexicographer is significant; it doubtless stems from the limited definitional agreement within the geographic profession. Despite much effort toward clarification, it sometimes seems that there are almost as many definitions of the field as there are geographers.

Not only are there plural definitions of the word geography but its meaning has changed greatly over the years. One does not have to be a classical scholar to appreciate that geographical study among ancient Greeks was significantly different from modern scholarly geography. Moreover, grade and high school instruction of a subject called geography is in no way comparable to the recently emerged university subject. Yet both share a common name.

More refined definitions of academic geography, simply stated, may be listed as follows: (1) a collection of facts and data concerning countries and continents, (2) the study of man in relation to his environment, (3) the study of landscape, (4) the study of distributions and patterns on the face of the earth, (5) the study of human occupancy of regions.

Of the above definitions, the first is probably the most widely used by the general public, and is certainly the most inaccurate. The other four definitions, invested with special interpretations and delicately shaded meanings, are variously employed according to personal preference. It might perhaps be added that there is another school of thought, whose research interests appear to conform to a subject-definition that geography is "what I like to study."

There are, of course, many important intellectual considerations involved in the multiple definition of geography but there is actually more unity than the debate might indicate. To the writer it appears that the unity centers on concepts of regional study, and that the main stream of American geography concerns regional analysis. This is the subject core and the common ground of most geographic viewpoints. Support for this position can be found in the regional orientation apparent in most current geographical research.

Assuming then, that regional study is indeed the heart of geographical study, and given the ambiguous and misleading nature of the word geography, a sound case can be made for changing the name of the field. True, a change is not likely to eliminate the well-known confusion of definition and purpose within the discipline, but a name that more accurately describes the bulk of geographers' scholarly activities and avoids confusing ambiguities could well be a positive move toward greater unity within the field, and most certainly will produce greater understanding by those outside the profession.

If acceptable to the profession, what might this new name be? In my view the name should be self-defining rather than a cryptic neologism. Furthermore, the new name should have sufficient latitude of interpretation so as to be acceptable to most, if not all, geographers while at the same time accurately signifying modern geographic study. Alexander's proposed term, Regional Science, has the merit of declaring the unifying theme of regionalism while averring a scientific concern. To my mind, however, Regional Science is unsatisfactory since it can be taken to suggest an interest in all scientific activity (chemistry, physics, etc.) in a given region. A further objection to Regional Science is its preemption by a group of regionally oriented economists and others whose objectives differ from those of most geographers. (3) A better term might perhaps be Regional Analysis, which not only defines itself but also the essentials of modern academic geography. A practitioner of Regional Analysis could be termed a Regionalist, one versed in regional phenomena. Not only does the term Regional Analysis avoid the misleading implication of a catholic interest in all forms of science within a region but it is also a wholly neutral title, free from arrogance or status-seeking overtones. It also clearly and accurately, and modestly, describes the field's activities.

The professional geographer in college and university might well wonder what this name could do to familiar department and course labels. Some of the changes might seem drastic, but to the writer they appear justified in terms of the greater accuracy achieved. A department functioning within a framework of Regional Analysis could achieve a more straightforward labeling of courses. The practice in geography departments of using the word geography wherever possible in course descriptions might be abandoned with good effect, permitting a more meaningful description.

If the field's name were to be changed to Regional Analysis, it is possible that familiar items in the college catalog might read somewhat like this:

DEPARTMENT OF REGIONAL ANALYSIS

(Formerly Department of Geography)

1. Introduction to the Physical Environment (formerly Introduction to Physical Geography).
2. Introduction to the Cultural Environment (formerly Introduction to Cultural Geography).
3. Natural Resources and Industries (formerly Economic Geography).
4. Regional Analysis of Europe; North America; South America; Africa; etc. (formerly Geography of Europe; North America; South America; Africa; etc.).
5. Regional Analysis of Political Units (formerly Political Geography).
6. Regional Analysis of Urban Units (formerly Urban Geography).
7. Field Methods in Regional Analysis (formerly Field Methods in Geography).
8. History of Thought in Regional Analysis (formerly History of Geographic Thought).
9. Cartography, Map Reading, Climatology, and such like would remain unchanged.

Adoption of a new name for the geographical field has many possible implications, not all of them good. But, on balance, it appears to the writer that the ends of geographical study would be better served, through clear declaration of objectives and semantic accuracy, by a new title. Problems facing the naming party are formidable, and include weight of tradition and sentiment on the one hand as well as lack of agreement for a new name on the other. My tentative proposal is that the term Regional Analysis should replace geography as applied to the academic field. But this proposal is not wholly an example of positive thinking; it is made more in a spirit of dissatisfaction with the present term than from conviction that Regional Analysis is the name that should be adopted. However, the writer has no doubts that some change is needed and seeks mainly to encourage discussion on the subject. The Association of American Geographers, the leading national professional organization, would be the logical promoter of a name change if such is desired by the profession. In my

view, the geographical profession has outgrown its name and it is time for a change. If enough Association members share this view there could be, after appropriate discussion pro and con, a resolution voted on by mail ballot. A vote that favors name change could be no more than recommendatory; but where the Association of American Geographers leads, individual university and college departments could follow with fair ease.

* * *

(1) Alexander, J. W., "Geography: As Some Others See It," *The Professional Geographer*, Vol. XI, No. 4, July, 1959, pp. 2-5.
(2) *Webster's New Collegiate Dictionary*, G. & C. Merriam and Co., Springfield, Mass.
(3) Isard, Walter, "Letters," *The Professional Geographer*, Vol. XI, No. 6, November, 1959, p. 43.

A PLEA FOR OPEN-BOOK EXAMINATIONS

*Ronald R. Boyce**

Western Washington College of Education

THE QUESTION as to what type of examination is best for any given purpose may appear trite to many professional geographers. After all, they may argue, is not what is being taught more important? To this the author agrees. The argument here is that open-book examinations necessarily include measurements of those characteristics which geographers generally consider to be the most important, and that many such measurements are not available in other types of examinations. It is furthermore argued that through the use of open-book examinations the need for sophistication and the development of rigorous concepts, principles, and manipulatory tools becomes obvious.

Geography professors generally agree that the better student should be able to solve new problems by applying given principles and concepts, and that he should be able to compare and interpret spatial phenomena. They insist that he should also be able to read carefully, describe precisely, and evaluate logically. Or more curtly, he should be able to think and solve problems. Yet, many of these professors administer examinations which generally cannot test this ability. This includes most forms of closed-book examinations. Such examinations generally place a premium on memorization and exact regurgitation. With closed-book examinations it is difficult to measure any of the desired attributes enumerated above; open-book examination, regardless of quality, can hardly avoid testing many of them.

Types of questions. Open-book examinations are characterized by at least seven major question types: (1) interpretation, (2) comparison, (3) manipulation, (4) supposition, (5) substitution, (6) astuteness, and (7) description. It should be noted that these question types truly measure those attributes which most professors prefer in a student.

Interpretation questions are perhaps the easiest to design and the most familiar to geographers. Generally, information is given to the student pertaining to an unfamiliar commodity flow or distribution after which the student is required to explain this spatial pattern with reference to principles previously given in the course. For example, the flow data above might be explained with reference to such spatial interaction models as $p \cdot p/D^n$, intervening opportunities, specific complementarity, supply and demand principles, transferability implications, certain location theory, entrepotism, and a whole gamut of variables associated with the costs of production and transportation.

Comparison questions are so well known that they need not be discussed here. Many of these types of questions are, of course, found in closed-book examinations. Never-

theless, their use in open-book examinations generally necessitates more rigorous demonstrations of comparisons and contrasts than a mere parroting of class notes and textbook material as is often the case otherwise.

Manipulation questions have been as yet little used in geography. They generally involve solving a particular problem with the use of graphs, mathematics, or sometimes, maps. For example, a student might be given the supply data of a particular commodity in one place, the demand data in another place, plus transportation cost data, and is then asked to determine the price or the amount of the commodity being moved. More complex models introduce intervening opportunities and require more knowledge regarding trade routes, production areas, and specific variables related to the transportation and production costs of a specific commodity in different areas.

Supposition questions are usually those which suppose that some change has occurred which will affect the entire spatial pattern. The student is then required to point out the many implications of this occurrence and to demonstrate how and why other areas would be affected. For example, it might be supposed that a slide had closed a certain railroad route, that the Mesabi Range had become exhausted of iron ore, or even that France had suddenly sunken beneath the sea. Such analysis obviously requires that the student be well grounded with reference to the interrelationships or connections (structure principles) of the earth and that he be able to manipulate this fabric of interconnections.

Substitution questions work very well even when few spatial principles are known. In this case, an analysis of spatial pattern of an area is previously presented to the student. The student is then asked to use this same technique with reference to a new area.

Astuteness questions measure the student's ability to read carefully as well as to think logically. The purpose here is to design the question so well verbally that the student can reach only one logical conclusion. This problem is similar to a selection-type question in mathematics except that in this case it is verbal rather than a mathematical solution. Other astuteness-type questions are those in which the student is asked to evaluate or criticize a given statement.

Description questions, as the name implies, require the student to precisely and logically describe what he sees on a map, a graph, an aerial photograph, or in the field. These questions have of course been used many years in writing and critique courses.

Advantages. As can be seen, open-book examinations eliminate most memorization and regurgitation questions almost by definition. When a student has complete access to reference materials, direct questions which can be easily and quickly looked up appear trivial. Consequently, the professor is forced to design a more analytical and problem-solving type of question which will require the student to think.

Such examinations also quickly separate the highly intelligent student from the dull student. While the very intelligent student who understands the concepts involved will be filled with new approaches, insights, and comments, the less intelligent student may find it difficult to say anything other than a few generalities. Original thought is thereby invited and appreciated. Furthermore, open-book examinations tend to instill in the student an interest in research. He becomes aware of problem solving and takes more interest in lectures and text because he realizes that both are steppingstones to greater understanding of new problems rather than ends in themselves.

Another advantage, which may be appreciated in many institutions burdened with crowded classrooms, is that open-book examinations tend to eliminate cheating. First of all, when a student has his text, notes, and atlas as intervening opportunities between him and his neighbor's paper, interaction is considerably reduced. Second, answers cannot be "ponied." Third, most open-book examinations are arranged such that it is difficult to quickly gather answers from a neighbor's paper. Therefore, in many types of open-book examinations class monitoring is unnecessary.

Disadvantages. Why then have open-book examinations not been used more extensively? First, there are a number of facts which must be memorized in any discipline; there are a great number in geography. The knowledge of this body of facts cannot be measured by an open-book examination. Moreover, one cannot, of course, effectively

give an open-book map test, nor can one directly test reading assignments or proper note taking by this method. Therefore, the constant use of the map, among other reasons, assures us that closed-book examinations will always be important in geography.

Another important reason that open-book examinations have not been popular, however, is undoubtedly caused by the previous naive nature of geography itself. Note that it is almost impossible to structure an open-book examination if theory, concepts, principles, and manipulatory tools are lacking. Geography has now reached a level where such "thinking tools" are available. The use of open-book examinations will surely propagate the use of them.

Besides the disadvantages above, open-book examinations are difficult to design, not only in terms of man-hour requirements but in terms of formulating valid questions. They require considerable patience and practice to perfect. Furthermore, if not properly designed, they will be difficult to correct. The author has partially overcome this latter difficulty by limiting the length of the answer. It is assumed quality is better than quantity. Furthermore such a procedure forces the student to organize his thoughts carefully as well as to separate the "wheat from the chaff."

Another disagreeable aspect is that the duller student will rarely be able to do much better than a "C" despite tremendous memory work. It is frustrating to the teacher as well as the dull student who, although spending considerable effort, consistently fails the examinations. But then, maybe it is high time we realized that to try is not good enough in this world.

The first attempts at open-book examinations are also quite frightening to many students. Such examinations have a very high panic index. For example, a student who becomes tense in a closed-book examination may become almost inoperative during his first few open-book examinations. On the other hand, some students have a false, but temporary, sense of security preceding their first open-book examinations and are consequently underprepared. After trying both types of examinations most students prefer the closed-book type. In this latter case they feel more secure, because they know what and how to study. In the open-book examination they know that they will have to think during the examination regardless of previous preparation.

Despite these many disadvantages it is felt that they are far outweighed by the advantages. This is especially the case because of the teaching concepts which are implicit in open-book examinations. It is realized, of course, that such examinations should only be supplemental to other types.

Sample questions. The following "sample examination" is a composite of major questions from several mid-term examinations given in the introductory course in world human geography at Western Washington College of Education. Many lesser questions which are necessarily included in any comprehensive examination are here omitted. These include questions directly related to attendance and attention in class, familiarity with the text as a manipulatory tool, and the ability to gather obvious data from various sources. Space is generally left between questions for answers.

1. Four flow patterns have been demonstrated in class as characteristic of "central areas." In this regard, demonstrate with reference to the agricultural interior of the United States which commodities would be moving and how such movements conform to the four flow patterns mentioned above.

2. Explain the following flows of Utah agricultural products to other states in the United States in relation to the principles and concepts given thus far in the course. Name specific products where possible and explain why movements do or **do not** occur. Data is in thousands of tons.

Minnesota	10	Texas	10
Missouri	10	Colorado	10
New York	10	Oregon	10
Kansas	40	California	220

3. It has been demonstrated in class that the costs of production and the costs of transportation are two important considerations in understanding areal differences and movements on the surface of the earth when modified with respect to complementarity and intervening opportunity. Demonstrate the validity of this statement as it pertains to agricultural production in the European-dominated portion of the Western World. Be sure to point out and demonstrate the many variables which may affect either or both of these major costs.

4. Evaluate the statement that the city is a miniature of the Western World. Base your knowledge of the city primarily on the central business district core-frame concept as has been handed out to you previously. Be sure to point out the fundamental philosophical differences between the spatial structure of the city and the spatial structure of the Western World as well as the basic similarities.

5. Explain the contrast between the spatial distribution and the spatial production patterns of coal in the United States as indicated by your atlas. Your explanation should be based on principles in the course rather than upon a description as to what the patterns look like.

* * *

(*) The assistance of Elbert E. Miller and Robert L. Monahan is gratefully acknowledged. The author is currently on leave from Western Washington College and employed in the Meramec Basin Research Project, Washington University, St. Louis.

UNDERGRADUATE PREPARATION FOR A PLANNING CAREER

Theodore Herman

Colgate University

IN VIEW OF the demand for city and regional planners in the United States, it is fitting that undergraduates be introduced to the field and, if interested, be given appropriate training as preparation for entering graduate school for an advanced degree in planning.

Many geographers will consider that the proper pre-professional training is a concentration in geography. But the curious fact is that numerous public and private planning organizations do not even list geography as a preferred undergraduate concentration; instead, they look for majors in economics, architecture, engineering, sociology, public administration, and law. Although graduate schools are more broad-minded, there is still a distinct lag in recognizing the appropriateness of a geographic background for planning among the practicing professionals and, also, on many undergraduate campuses.

For the past year we in the Geography Department at Colgate have been trying to arouse students to consider a planning career. This effort stems in part from a natural interest in the better use of earthly space, but more from Colgate's constant encouragement to liberal arts men to take part in government or in other forms of public service. Fortunately for our civic propaganda, most Colgate students come from cities or suburbs in the east and hence are strongly aware of the increasing complexities of their own communities. Our real problem has been to know what academic advice to give to interested students.

Since geography clearly holds no monopoly on pre-planning preparation, we conferred with colleagues in sociology and political science who are also interested in planning, considering whether to lay down a rigid curriculum or merely to designate certain existing courses as desirable. One of the main arguments against setting up a separate concentration was that Colgate is a liberal arts college of only some 1350 undergraduate students, and is suffering from limited finances and a faculty already spread thin through an extensive general education program. Our aim, therefore, was to see what could be done without adding a single course, secretary, typewriter, or even another regulation to be kept in mind.

In order to support any advice to students, a letter was sent to the chairmen of nine of the leading graduate planning schools, asking them to mark beside each of the 38 even remotely related courses currently offered at Colgate one of the following symbols: B (basic), D (desirable), or N (not needed) for pre-planning training. In addition, three specific questions were raised: (1) To what extent should undergraduates study location theory? (2) What statistical and mathematical preparation is needed? (3) Are there any courses not listed that should be offered? We did not set a limit on the number of courses to be marked with any symbol, nor did we explain the content of any of the listed courses. However, we did state that, in addition to the normal concentration requirements, every Colgate student takes a basic education core program

of 10 or 11 courses in which some of the problems and literature of the regular departmental courses become known.

As expected, the replies differed in details, but 10 subjects (some 13 courses) received 7, 8, or 9 basic designations. We are, therefore, stressing these when we advise our students. Nine subjects received 4, 5, or 6 basic designations, and 19 received 0 to 3 basic marks. The three lists are as follows:

BASIC IN 7, 8, OR 9 DESIGNATIONS

Principles of Economics
Principles of Sociology and Anthropology
Elements of Geography
Urban Geography
Cartography and Aerial Photo Interpretation
State Government and Administration
Municipal Government and Administration
Creative Design Workshop
Introduction to Statistics
English Speaking and Writing

BASIC IN 4, 5, OR 6 DESIGNATIONS

Population Problems
Urban and Rural Communities
Economic Geography
Principles of Government Administration
Public Finance
Mathematics of Finance
Logic and Scientific Method
Algebra and Trigonometry
Engineering Drawing

BASIC IN 0 TO 3 DESIGNATIONS

Economic Statistics
Economic Development
Social Reform and Change
American Culture and the Social Structure
Industry and the Social Order
Sociology of Politics
Geography of North America
Meteorology
Geomorphology
American Government
Constitutional Law
Administrative Law
Probability and Statistics
Calculus
Descriptive Geometry
Modern Architecture
Engineering Architecture
Applied Psychology
Human Relations

Among the preferred electives in the first group there are seven different disciplines, although several are represented only by introductory courses. Most surprising to us was the high rank of a workshop course in creative design and the strong emphasis on training in the effective use of English. Probably the deans of most graduate schools would also emphasize these two subjects if they had a chance to express themselves to the undergraduate authorities. Certainly one can see how planners would profit from such training in their undergraduate days.

It will be noticed that not many basic votes were given to the various courses in mathematics, engineering drawing, and economics, although students who major in architecture, engineering, or economics are usually heartily welcomed into the field even without graduate training. Perhaps this is another evidence of the lag between the professional school and the practicing planner, reinforced by the human tendency to reproduce our own kind. The study of location theory was considered not essential for undergraduates by seven chairmen, but two others urged it strongly.

From these replies we can advise interested students to concentrate in any department, but particularly in a social science where some of the preferred courses are offered. Otherwise, most of the first group courses should be taken as electives, both for their own value and so that the student can be sure that he is really interested in the various things that concern planners.

Since a Colgate student normally takes forty 3-hour courses in his four years, the scheduling of all of the highest priority pre-planning courses as electives would be possible for the student who began his concentration and these electives in the second half of his sophomore year. If his concentration included two of these electives, he would be able to begin his pre-planning work in the first half or even the second half of his junior year. However, we certainly do not insist that all the electives should be taken, although we recommend it. It is, after all, the graduate school that will decide which applicants to admit.

The chief academic objection to this assortment of electives is that it provides for no intellectual progression and synthesis, as with a normal departmental concentration. The best safeguard for this lack is in the advising of the student, and where possible, in encouraging him to direct his research papers in various courses toward planning problems. We are finding that this deficiency is actually not serious, because the man who has his eye fixed on a planning career is doing this integration in his own head as he matures. The professional sharpening and application of such integration is, in our opinion, the task of the graduate school.

In conclusion we believe that, since planning requires many talents, our very flexible elective program is the most realistic for our

students, for their progress in graduate school, and in keeping with Colgate's academic resources. For geography students, planning is an exciting career to those attracted by the problems of concrete spatial expression.

A METHOD FOR MAKING NOTATIONS ON AERIAL PHOTOGRAPHS

Simon Baker

State Teachers College, Bridgewater, Mass.

DURING a recent stay in Ceylon the writer had the pleasure of working with members of the Photographic Survey Corporation of Toronto, Canada. He was introduced by his colleagues to a quick and accurate method of making notations on aerial photographs. This technique was so helpful in doing land use mapping that it is being passed on in the assurance that geographers will find it useful when doing aerial photo interpretation for any purpose. The method could also be adopted by teachers of aerial photo interpretation as an aid in preparing photographs for study by their classes.

The technique is simple and the materials required are few; only a pin and a pen are needed in addition to the aerial photographs. When an object or area has been identified, a small pin hole is made on the photograph just penetrating through the paper. Very little damage is done by the pin hole, which is so inconspicuous that the photograph must be held up to the light in order to locate it. The photograph is then turned over and the hole circled in ink. The writer found ball point pens to be most convenient for this purpose in the field. Notations are then made on the white back of the photograph adjacent to the circled hole. If the holes are numerous and close together, the notations may take the form of some convenient numerical or letter code. For classroom use, numerous brief written descriptions may be fitted on the backs of standard sized aerial photographs, and the surfaces are left clear for observation.

The writer utilized this method to great advantage while in the field. It was possible to field check very small units and mark the photographs clearly for later photo interpretation away from the locale where the field work was being carried on. The pin prick method also makes possible rapid and accurate recording while driving along in a vehicle. This is particularly useful when large areas must be checked or when time in the field is limited. Under these circumstances, the use of china marking pencils would have been too slow and would have obliterated portions of the photographs. Lines made using these pencils are not permanent, and would have rubbed off or become faint as the photographs were handled. It would also have been necessary to use a numbering system on the photographs and keep the observations separately in a notebook.

The chief advantages of the pin prick method are the precision with which exact locations may be indicated, and the speed and permanence with which notations may be made with a minimum of obstruction on and damage to, the photograph.

ASSOCIATION AFFAIRS

PRELIMINARY PROGRAM
AAG 1960 DALLAS MEETINGS
The Statler Hilton

The following is a preliminary program, with some positions as yet unfilled. The final and complete program will be distributed at the meetings.

SUNDAY, APRIL 17, 1960

1:30 - 5:00 p.m.
DALLAS METROPOLITAN FIELD TRIP

4:00 - 9:00 p.m.
REGISTRATION — Ballroom Floor

MONDAY, APRIL 18, 1960

6:30 a.m. - 7:00 p.m.
ARBUCKLE MOUNTAINS AND SOUTHERN OKLAHOMA FIELD TRIP

8:00 - 10:45 a.m.
REGISTRATION — Ballroom Floor

10:45 - 11:45 a.m.
GENERAL WELCOMING SESSION — Grand Ballroom

12:00 noon
FASHION SHOW LUNCHEON FOR LADIES AT THE NEIMAN-MARCUS ZODIAC ROOM

1:30 - 4:30 p.m. (Three Concurrent Sessions)

A. ECONOMIC GEOGRAPHY, I — Embassy Ballroom
....., Presiding

1. T. K. Chang (Wisconsin State Coll., Stevens Point) — *Exploitation of the Sandals.*
2. John Wesley Coulter (Univ. of Cincinnati) — *The Problem of Over-Population in Morocco.*
3. James I. Culbert (New Mexico State Univ.) — *New Developments in New Mexico Coal Mining.*
4. Barry Neil Floyd (Dartmouth Coll.) — *Changing Patterns of African Land Use in Southern Rhodesia.*
5. John Hiltner (Bowling Green State Univ.) — *An Analysis of Possible Relationship between Commodity Prices and Sown Crop Area in an "Underdeveloped" Country.*
6. Jordan A. Hodgkins (Univ. of Cincinnati) — *Regional Patterns of Soviet Coal Production and Consumption.*
7. John Thompson (Stanford Univ.) — *Food Production in San Salvador, Republic of El Salvador.*

(To Be Read By Title)

8. David W. Preston (Univ. of British Columbia) – *Changes in British Investment in South America.*
9. Joseph T. Sinclair (Eastern Michigan Univ.) – *The Current Development of the Tourist Industry and its Future in the Economy of El Salvador.*
10. Karl Stacey (Kansas State Univ.) – *Energy Requirements of Japan, 1955-1975.*

B. EARLY AMERICAN CATTLE RAISING – Embassy East
Gary S. Dunbar (Univ. of Virginia), Presiding

1. Charles W. Arnade (Univ. of Florida) – *Cattle Raising in Spanish Florida, 1513-1763.*
2. Gary S. Dunbar (Univ. of Virginia) – *Colonial Carolina Cowpens.*
3. Donald D. Brand (Univ. of Texas) – *The Early History of the Range Cattle Industry in Northern Mexico.*
4. L. T. Burcham (Sacramento, California) – *Cattle Ranching in California: 1770 to 1880.*
5. Paul C. Henlein (Cincinnati, Ohio) – *Early Cattle Ranges of the Ohio Valley.*
6. Francis L. Fugate (Texas Western Coll.) – *South Texas: Birthplace of the Range Cattle Industry.*

C. HISTORY OF GEOGRAPHY (1:30 - 3:00 p.m.); TRANSPORTATION GEOGRAPHY (3:15 - 5:00 p.m.) – Embassy West

History of Geography
....., Presiding

1. Robert N. Taaffe (Indiana Univ.) – *The Evolution of the Regional School in Soviet Geography.*
2. Fred Lukermann (Univ. of Minnesota) – *The Concept of Location in Classical Geography.*
3. James M. Hunter (Georgetown Univ.) – *An Examination of a Concept Basic in Ratzel's Methodology of Political Geography: The State is a Spiritual Moral Organism.*
4. Robert L. Anstey (Quartermaster Research and Engineering Command, Natick, Mass.) – *The Geographic Work of Lewis Evans.*

Transportation Geography
....., Presiding

1. Aloys A. Michel (Yale Univ.) – *The Canalization of the Moselle.*
2. Clarence W. Minkel (Syracuse Univ.) – *The National Railroad Project of Venezuela.*
3. Kuei-Sheng Chang (Wayne State Univ.) – *The Changing Railroad Pattern in Mainland China.*
4. Richard L. Day (Univ. of Florida) – *An Analysis of Through Freight Traffic in the East St. Louis Gateway.*
5. James B. Kenyon (Port of New York Authority) – *Freight Transportation Trends Associated with the Suburbanization of Industry: An Example from the Paterson-Passaic District of New Jersey.*
6. Arthur F. Loeben (Montgomery County Planning Commission) – *Land Use Changes and Development at Five Closely Spaced Interchanges of the Pennsylvania Turnpike Located in Montgomery County, Pennsylvania.*

(To Be Read By Title)

7. Donn K. Haglund (Univ. of Wisconsin, Milwaukee) – *The Alaska Highway: Attendant Economic Development.*
8. Frank H. Thomas (Southern Illinois Univ.) – *Selected Commodity Flow Patterns of the Denver and Rio Grande Western Railroad.*
9. William C. Wonders (Univ. of Alberta) – *Winter Roads in Northwest Canada.*

5:30 p.m.
SPECIAL PARTIES
Syracuse University

8:00 p.m.
PLENARY SESSION
(Program arranged by the President.)
Paul A. Siple – *First Winternight at the South Pole.*

TUESDAY, APRIL 19, 1960

7:30 a.m.
SPECIAL BREAKFASTS
Clark University

8:30 - 10:30 a.m. (Three Concurrent Sessions)

A. AGRICULTURAL GEOGRAPHY – Embassy Ballroom
Leslie Hewes (Univ. of Nebraska), Presiding

1. Syed Reza Ahsan (Univ. of Florida) – *Worthington: A Sample Study of Land Use in Santa Fe Valley, Florida.*
2. John P. Augelli (Univ. of Maryland) – *Functions of the "Agricultural Colony" in the Dominican Republic.*
3. James M. Blaut (Yale Univ.) – *Jamaican Farming Systems in Nicaragua, Costa Rica, and Panama.*
4. Allen D. Bushong (Univ. of Florida) – *Mennonite Settlement in British Honduras.*
5. Raymond E. Crist (Univ. of Florida) – *Rice Culture in the Camarque.*
6. Robert O. Johnsrud (Northwestern Univ.) – *Guided Economic Change in a Northern Nigerian Agricultural Community.*
7. George H. Kakuichi (Univ. of Washington) and Setsutaro Murakami (Ehime Univ., Japan) – *Ocho Village: A Study on the Specialized Use of Slopes in Southwestern Japan.*
8. Ying-Cheng Kiang (Eastern Illinois Univ.) – *The Climate for Growing Wheat in China.*

B. CLIMATOLOGY – Embassy East
Glenn T. Trewartha (Univ. of Wisconsin), Presiding

1. Thomas Frank Barton (Indiana Univ.) – *Thailand's Annual Rainfall by Geographic Regions.*
2. Clyde J. Bollinger (Univ. of Oklahoma) – *The Sun-Tide Origin of Climatic Cycles.*
3. Douglas B. Carter (Syracuse Univ.) – *Agricultural Systems and Expectable Drought in Mexico.*
4. Earl E. Lackey (Quartermaster Research and Engineering Center, Natick, Mass.) – *A Nomographic and Machine Method for Assessing Daily Minimum Temperature Frequencies.*
5. James F. Lahey (Ohio Univ.) – *On the Validity of Mean Autumn 300 mb Winds Associated with the Jet Stream over North America.*
6. Robert D. Rudd (Oregon State Coll.) – *Summer Frontal Precipitation in the "Daf" Climate Area of the United States.*
7. Patrick John Tyson (Southern Illinois Univ.) – *Winds and the Kinetic Theory of Gases.*
8. Lawrence G. Wolf (Univ. of Cincinnati) – *A Comparison of the Idealized and Composite Distribution of the Climates.*

C. INDUSTRIAL AND MANUFACTURING GEOGRAPHY – Embassy West
....., Presiding

1. Paul E. Lydolph (Univ. of Wisconsin, Milwaukee) – *The USSR Chemical Industries.*
2. Tom L. McKnight (Univ. of California, Los Angeles) – *Manufacturing in Arizona.*
3. Robert D. Picker (Wisconsin State Coll., Whitewater) – *The Expansion of Soviet Ferrous Metallurgical Production: The Evolution of the Third Metallurgical Base in Soviet Asia.*
4. Mary Megee (Southern Illinois Univ., East St. Louis) – *On Measuring the Industrial Character of an Area.*
5. Herbert L. Rau, Jr. (Kansas State Univ.) – *The Electric Power Industry of East-Central Brazil.*
6. Theodore Shabad (New York, New York) – *Locational Factors in the Soviet Synthetic Rubber Industry.*
7. Jack Richard Villmow (Boston Univ.) – *Industrialization in the German Democratic Republic.*
8. Gilbert F. White (Univ. of Chicago) – *Water Supply as a Factor in Industrial Location.*

(To Be Read By Title)

9. Arthur D. Earick (Oklahoma State Univ.) – *The Industrial Potential of Stillwater, Oklahoma.*

10:45 - 12:00 noon (Panel Discussion Groups)

A. OPEN MEETING OF THE COMMITTEE ON MILITARY GEOGRAPHY –
Thomas R. Smith (Univ. of Kansas), Presiding

Panel: *Geography in the Military Curriculum*
Lt. Col. Otis W. Plant (Command and General Staff Coll., Fort Leavenworth)
Col. W. L. Baxter (U. S. Air Force Academy)
Capt. Edmund R. Thompson (U. S. Military Academy)

Discussants: Lester W. Trueblood (U. S. Government)
Alvin A. Munn

B. INTERNATIONAL FELLOWSHIPS – Embassy West
Donald Patton (Resources for the Future, Inc.), Presiding

12:30 p.m.

SPECIAL LUNCHEONS
Indiana University
University of California, Los Angeles
Society of Women Geographers

1:30 - 3:30 p.m. (Three Concurrent Sessions)

A. URBAN GEOGRAPHY – Embassy East
....., Presiding

1. Lloyd D. Black (Department of Commerce) – *Metropolitan Area and City Size Patterns of Manufacturing Industries: 1954.*
2. James E. Brooks (Portland State Coll.) – *Problems of a Riverine Port: Portland, Oregon.*
3. S. Earl Brown (Ohio State Univ.) – *Some Community Relations of the Ohio Valley's New Aluminum Companies.*

4. Marvin F. Gordon and Donald E. Starsinic (Bureau of the Census) – *The 1960 Urbanized Area Program.*
5. Robert A. Harper (Southern Illinois Univ.) – *River Junction Communities of the Lower Ohio Valley: A Functional Comparison.*
6. David J. Hooson (Univ. of Maryland) – *The Growth and Distribution of Soviet Cities.*
7. Geoffrey J. Martin (Eastern Michigan Univ.) – *"The Law of Primate Cities" Re-examined.*

(To Be Read By Title)

8. Arthur Getis (Univ. of Washington) – *The Service Function of Cities.*
9. John W. Snaden (Southern Illinois Univ., East St. Louis) – *The Changing Patterns of Land Utilization in Cahokia, Illinois: The Residential Period, 1950-1960.*
10. William A. Withington (Univ. of Kentucky) – *Urban Land Use in Southeast Asia: The Example of Medan, Indonesia.*

B. MARKETING GEOGRAPHY – Embassy West
William Applebaum (Harvard Univ.), Presiding

1. Harold R. Imus (Larry Smith & Co.) – *Projecting Sales Potentials for Department Stores in Regional Shopping Centers.*
2. Bart J. Epstein (Stop & Shop) – *Evaluation of an Established Planned Shopping Center.*
3. Jack C. Ransome (The Kroger Co.) – *The Organization of Location Research in a Supermarket Chain.*
4. Howard L. Green (Montgomery Ward) – *Planning a National Retail Growth Program.*
5. Saul B. Cohen (Boston Univ.) – *Location Research Programming for Food Wholesalers.*
6. William Applebaum (Harvard Univ.) – *Teaching Marketing Geography by the Case Method.*

C. EASTERN EUROPE – Embassy Ballroom
George W. Hoffman (Univ. of Texas), Presiding
(Arranged by the Chairman.)

1. Huey Louis Kostanick (Univ. of California, Los Angeles) – *Poland: Dominant Personality of Eastern Europe.*
2. Norman J. G. Pounds (Indiana Univ.) – *Land Use in the Hungarian Plain.*
3. W. Gordon East (Univ. of London) – *The Concept and Political Status of the Shatter Zone.*
4. George W. Hoffman (Univ. of Texas) – *The Geography of United States Aid: Yugoslavia, A Case Study.*

3:30 - 5:00 p.m.

TEA AND RECEPTION – Southern Methodist University
(Buses will leave the hotel at 3:15 and 3:45 p.m.)

5:30 p.m.

SPECIAL PARTIES
University of Wisconsin
Northwestern University

6:30 p.m.

SPECIAL DINNERS
University of Michigan

8:00 p.m.

PLENARY SESSION — Grand Ballroom
Dan Stanislawski (Univ. of Texas), Presiding

Walter Prescott Webb (Univ. of Texas) — *Three Geographical and Historical Concepts Essential to an Understanding of the American West.*

Discussants: Lorrin Kennamer (Univ. of Texas)
Donald Meining (Syracuse Univ.)
David Amiran (Hebrew Univ., Jerusalem)
Carl O. Sauer (Univ. of California)

WEDNESDAY, APRIL 20, 1960

7:30 a.m.

SPECIAL BREAKFASTS
University of Nebraska
University of Washington

8:30 - 11:00 a.m.

PLENARY SESSION: SCANDINAVIAN SYMPOSIUM — Embassy Ballroom
Chauncy D. Harris (Univ. of Chicago, Vice-President International Geographical Union), Presiding

(Arranged by Kirk H. Stone, Univ. of Wisconsin.)

1. Vincent Malmstrom (Middlebury Coll.) — *Patterns of Circulation in Norway.*
   Discussant: L. M. Sommers (Michigan State Univ.)
2. Trevor Lloyd (McGill Univ.) — *The Cooperative Movement and Danish Agriculture.*
   Discussant: .....
3. Sigurdur Thorarinsson (Museum of Natural History, Reykjavik) — *Geographic Changes in Icelandic Population.*
   Discussant: .....
4. W. R. Mead (Univ. Coll., London) — *The Finnish Problems of Settlement.*
   Discussant: .....
5. Kirk H. Stone (Univ. of Wisconsin) — *Swedish Fringes of Settlement.*
   Discussant: .....

Annotated Scandinavian Bibliography prepared by the Arctic Bibliography Unit, The Arctic Institute of North America, under the direction of Miss Marie Tremaine will be available at the door of the Embassy Ballroom.

12:30 p.m.

SPECIAL LUNCHEONS
University of Chicago

1:30 - 5:00 p.m.

DALLAS METROPOLITAN FIELD TRIP

1:30 - 4:30 p.m. (Three Concurrent Sessions)

A. CULTURAL GEOGRAPHY — Embassy Ballroom
Wilma B. Fairchild (Amer. Geog. Soc.), Presiding

1. F. H. Bauer (Univ. of California, Riverside) — *A Few Went North: Factors in the White Settlement of Northern Australia.*

2. John F. Bergmann (Southern Methodist Univ.) – *The Antiquity of Cacao in the Americas.*
3. Walter Williams Deshler (Univ. of Maryland) – *Native Cattle Keeping in Eastern Africa: Analysis and Speculation from a Geographer's View.*
4. Arthur H. Doerr (Univ. of Oklahoma) – *The Philippines: Purgatory or Paradise?*
5. Edwin Doran, Jr. (Oxnard, California) – *Landscape Changes on Tarawa Atoll.*
6. L. A. Peter Gosling (Univ. of Michigan) – *Moslem Law, Custom and Usage Reflected in the Agricultural Economy of Malaya.*
7. John R. Dunkle (Univ. of Florida) – *Site and Function in St. Augustine, Florida.*
8. Herbert L. Slutsky (Roosevelt Univ.) – *An Ecological Study of Total Mortality among Guatemalan Pre-School Children, with Special Emphasis on Protein Malnutrition and Kwashiorkor.*
9. J. Sonnenfeld (Univ. of Delaware) – *The Function of Primitive Implements: A Study in Implement Geography.*

(To Be Read By Title)

10. Hans Carol (Clark Univ.) – *Field Training for Graduate Students.*
11. C. Wallace Dierickx (Chicago Teachers Coll.) – *The Results of Testing the Geographical Background of over 1000 Entering College Freshmen.*
12. Alex P. Polezhayev (Moscow State Univ.) – *Geography in Moscow State University.*
13. Richard R. Randall (U.S. Government) – *The Slovenes in Austria.*
14. Vincent K. Shaudys (Montana State Univ.) – *The External Aspects of the Political Geography of Five Diminutive European States.*

B. LAND USE – Embassy West
Ralph E. Olson (Univ. of Oklahoma), Presiding

1. Ian Burton (Univ. of Chicago) – *Factors Affecting the Agricultural Occupance of Flood Plains in the United States.*
2. Dale E. Courtney (Portland State Coll.) – *Problems of Predicting Land Use in Underdeveloped Areas of the Humid Low Latitudes.*
3. Charles C. Morrison (Amer. Geog. Soc.) – *The Hackensack Meadows: A Metropolitan Frontier.*
4. Gordon E. Reckord and Charles F. Daoust (Department of Commerce) – *Projection of Future Land Use: San Francisco Bay Area, 2020.*
5. Anthony V. Williams (Univ. of Washington) – *Economic Development in an Advanced Economy: The Case of South Wales.*
6. Bernt L. Wills (Univ. of North Dakota) – *The Impact of Oil on the Williston Area of North Dakota.*

(To Be Read By Title)

7. Jacqueline L. Beyer (Montana State Univ.) – *Geographic Contributions to Precision in Resource Planning.*
8. Luella N. Dambaugh (Univ. of Miami) – *The Everglades National Park: A Wilderness Reserved.*
9. Ray Y. Gildea (Alabama Polytechnic Inst.) – *The Small Watershed Protection Program: A Summons for Geographers.*
10. Hildegard Binder Johnson (Macalester Coll.) – *The Transfer of Private Land to Public Ownership in the Whitewater Valley in Southeastern Minnesota.*
11. Eugene C. Kirchherr (Western Michigan Univ.) – *The Changing Pattern of Airport Land Use in the Chicago Metropolitan Area: 1927-1956.*

C. PHYSICAL AND BIOGEOGRAPHY (1:30 - 2:30 p.m.); CARTOGRAPHY (2:45 - 4:45 p.m.) – Embassy East

Physical and Biogeography
....., Presiding

1. Karl W. Butzer (Univ. of Wisconsin) – *Geomorphological Evolution during the Pleistocene of Mallorca, Spain.*
2. Howard J. Critchfield (Western Washington Coll.) – *Spartina townsendii: A Significant Plant in Coastal Geography.*
3. David J. de Laubenfels (Syracuse Univ.) – *The Similarity between Lighter Tropical Forest and Temperate Forest.*
4. John H. Vann (Louisiana State Univ.) – *The Mangrove Plant Community of the Guiana Coast of South America.*
5. Charles F. Bennett (Univ. of California, Los Angeles) – *Cultural Zoogeography: An Inviting Field of Research for Geographers.*

Cartography
Fred Foster (Univ. of Illinois), Presiding

1. Robert Harold Brown (St. Cloud State Coll., Minn.) – *Some Sequential Occupance Time Lines of Minnesota.*
2. Nelson C. Clark (Aeronautical Chart and Information Center, St. Louis) – *Indonesian Kampongs as a Cartographic Problem.*
3. John E. Dornbach (Aeronautical Chart and Information Center, St. Louis) – *Translating the Chart through Design.*
4. Virginia P. Finley (Corps of Engineers, Wilmette, Illinois) – *Operation "Cold Deck": New Horizons in Photo-interpretation.*
5. William Goodwin (Rutgers, The State Univ.) – *Mapping Industrial Change: New Jersey as an Example.*
6. Walter W. Ristow (Library of Congress) – *Aeronautical Charts: Fifty Years of Evolution.*

(To Be Read By Title)

7. Allen K. Philbrick (Michigan State Univ.) – *A Practical Suggestion for the More Systematic Construction of Regional Generalization.*

4:45 - 6:00 p.m.
BUSINESS MEETING – Embassy Ballroom

8:00 p.m.
ANNUAL BANQUET – Grand Ballroom

Address by Honorary President, John E. Orchard – *Industrialization of Japan, Mainland China, and India and its World Significance.*

THURSDAY, APRIL 21, 1960

FIELD TRIP TO TEXAS HILL COUNTRY, APRIL 21-22

FIELD TRIP TO HOUSTON-GULF COAST, APRIL 21-23

8:30 - 11:30 a.m. (Three Concurrent Sessions)

A. STATISTICAL AND MEASUREMENT GEOGRAPHY – Embassy East
....., Presiding

1. John W. Alexander and James Lindberg (Univ. of Wisconsin) – *Measurements of Manufacturing: Coefficients of Correlation.*

2. Ronald E. Boyce and Robert L. Monahan (Western Washington Coll. of Educ.) – *Measurements of Urban Retail Affinity: A Further Application of Linkage Analysis.*
3. Margaret B. Downs (College Park, Maryland) – *The Determination of Regional and Extra-Regional Markets in a Historical Economic Geographic Study.*
4. William L. Garrison (Univ. of Washington) – *Accessibility of Urban Centers of Transportation Networks.*
5. Peter R. Gould (Northwestern Univ.) and Robert T. Smith (Australian National Univ.) – *Measuring the Relationships between Rail Shipments, Road Access, and Road Competition in Ghana and Australia.*
6. Yuzuru Kato (Univ. of Chicago) – *New Concepts: Population Distance and Transportation Density.*
7. Harold H. McCarty (State Univ. of Iowa) – *A System of County Income Estimation for Use in Economic Geography.*
8. Edwin N. Thomas (State Univ. of Iowa) – *Toward an Expanded Central Place Model.*
9. Joseph Velikonja (Southern Illinois Univ.) – *Industrial Diversification in the City of Chicago.*

B. ECONOMIC GEOGRAPHY, II – Embassy Ballroom
....., Presiding

1. Albert S. Carlson (Dartmouth Coll.) – *Will the Woolen and Worsted Factories of New England Follow the Cotton Textile Industry to the South?*
2. George F. Deasy and Phyllis R. Griess (Pennsylvania State Univ.) – *Localization of Electric Generating Plants: The Case of Pennsylvania.*
3. Lee Guernsey (Indiana State Teachers Coll.) – *Land Use and Settlement Changes Caused by Strip Mining in Indiana.*
4. John J. McMurry (Florida State Univ.) – *Florida's "New" Gulf Shoreline.*
5. Merle Prunty (Univ. of Georgia) – *Impact of Imports on the Domestic Steel Market: The Case of Wire Products.*
6. Morgan Thomas (Univ. of Washington) – *Industrial Linkages and Economic Development.*
7. Charles B. Varney (Univ. of Florida) – *The Changing Importance of Florida's Tobacco Production in Agriculture.*

(To Be Read By Title)

8. Andreas Grotewold (Univ. of Missouri) – *International Trade and Economic Geography.*
9. Robert B. McNee (City Coll., New York) – *Processes Creating Geographic Patterns in the Managerial Economy.*
10. Alexander Melamid (New York Univ.) – *Settlements of Fire Island, New York.*
11. Philip W. Porter (Univ. of Minnesota) – *Does Geography Need a Social Physic?*

C. HISTORICAL GEOGRAPHY – Embassy West
....., Presiding

1. Robert R. Drummond (Indiana State Teachers Coll.) – *Sino-Burmese Boundary Disputes.*
2. P. Prasad Karan (Univ. of Kentucky) – *The India-China Boundary Problems in the Himalayas.*
3. Harishankar P. Srivastava (Univ. of Florida) – *The India-China Boundary: A Holding Line.*
4. Robert H. Fuson (Louisiana State Univ., New Orleans) – *Caicos: Site of Columbus' Landfall.*
5. Richard J. Houk (DePaul Univ.) – *Sao Tome and Principe: A Geographic Appraisal.*

6. Peveril Meigs (Quartermaster Research and Engineering Center, Natick, Mass.) – *Some Geographic Factors in the Peloponnesian War.*
7. Robert W. Pease (Univ. of California, Los Angeles) – *The Time Continuum of Geography in Modoc County, California.*
8. William C. Robison (Quartermaster Research and Engineering Center, Natick, Mass.) – *The Savannas of Virginia.*

(To Be Read By Title)

9. Milos M. Sebor (Tennessee Polytechnic Inst.) – *Historico-Geographic Aspects of Piracy.*

Harry E. Hoy, Chairman
Program Committee

University of Oklahoma

TRANSPORTATION COSTS TO DALLAS

	Transportation to Dallas, Round Trip, Tax Included			
	Airlines		Rail Coach	Bus
From	Air Tourist	Jet Surcharge Each Way		
Atlanta	$ 91.63	$ 4.40	$ 49.50	$44.77
Boston			118.14	92.07
via Chicago	219.12	6.60		
via New York	226.71	6.60		
Chicago	93.72	3.30	52.09	38.56
Cincinnati	114.07			
Denver	86.02		45.65	43.07
Los Angeles	135.41	4.40	87.62 ex. 2.20	71.94
Miami			89.10	67.05
via Atlanta	136.51	3.30		
via New Orleans	136.51	4.40		
Minneapolis	112.86			
New Orleans	59.18			
New York	148.61	6.60	106.80	79.70
San Francisco	168.52	6.60	96.31 ex. 2.20	75.96
		via San Fran.		
Seattle	233.75	6.60		
Washington	128.04		86.41	77.17

LADIES' FASHION SHOW LUNCHEON

Arrangements have been made for a Fashion Show Luncheon at 12:00 noon on Monday, April 18 in the Zodiac Room of Neiman-Marcus. Tickets at $3.00 each may be obtained at the Information Desk on the Mezzanine Floor of the Statler Hilton Hotel. Reservations will close at 10:00 a.m. on Monday.

REGIONAL DIVISIONS

NEW YORK METROPOLITAN DIVISION

The December meeting of the New York Metropolitan Division of the AAG was held at Columbia University, December 11, 1959. The evening program consisted of a panel discussion on "The Relationships of Economics and Geography." Panel participants included John E. Orchard, Chairman; Charles P. Issawi; Maurice Ballabon; and Leonard Zobler.

Two other meetings are scheduled for the coming academic half-year. In February 1960, Mr. C. E. Cook of the Standard Oil Company of New Jersey will discuss "Oil in the Libyan Desert." Mr. Cook will stress Libyan physiography, the problems of oil production in the Libyan Desert, and the possible economic significance of the new discoveries. The talk will be illustrated by slides and a 15-minute movie of the production area. A question and answer period will follow the presentation.

On May 13, 1960, Mr. William Hance will discuss "The Location of Export Production in Tropical Africa."

Both talks will be given at the American Geographical Society.

The newly elected President of the New York-New Jersey Division of the AAG, Dr. George B. Cressey, will attend both meetings to familiarize himself with the interests of the members of the Metropolitan area.

NOTE FROM THE EDITOR

Your Editor wishes to extend her sincere thanks to members of the AAG for the articles and other items that they have submitted for publication in *The Professional Geographer*. There are several types of materials that are particularly desired for future issues, namely *content* as well as technique articles, and reports concerning activities of Regional Divisions and AAG committees. Contributions in these fields are invited.

Since the Editor's many duties preclude extensive rewriting, it is requested that manuscript ready for the printer be submitted rather than letters, notes, clippings, and other raw data. The "Suggestions to Contributors" item that appears in every issue of *The Professional Geographer* may be helpful in properly preparing manuscript for publication.

Phyllis R. Griess, Editor

HANDBOOK - DIRECTORY, 1956

Herman R. Friis

Editor-in-Chief

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Washington 6, D.C.

ANNOUNCEMENTS AND REPORTS

RECENT GEOGRAPHY THESES COMPLETED AND IN PREPARATION

As a service to readers, *The Professional Geographer* has been publishing semiannual lists of titles of new geography theses completed and in preparation. According to a new policy, the thesis list will henceforth be published only once annually, in the November issue, in order to consolidate in a single source all titles pertaining to an academic year. Titles should be submitted *prior to September 1* to Dr. Leslie Hewes, Department of Geography, University of Nebraska, Lincoln 8, Nebraska. Titles followed by an asterisk in the list below are available on interlibrary loan.

PH.D. DISSERTATIONS COMPLETED

Al-Ani, Khattab "The Gezira Scheme in the Sudan." Columbia University, December 1959.*

Coulson, Lois Elaine "Evolution of the Recreational Occupance of Berrien County, Michigan, with Emphasis on the Present Recreational Landscape." University of Illinois, October 1959.*

Curti, G. Philip "The Isle of Man: The Geographical Factors in the Evolution of a Political Enclave." University of California, Los Angeles, January 1960.

Day, Richard Lorey "East St. Louis, Illinois: A Transportation and Freight Traffic Center." University of Illinois, October 1959.*

Dooley, William E. "A Study of the Possibilities of Peatland Reclamation in Ireland and a Suggested Plan for Its Implementation." University of Michigan, June 1959.* Microfilmed.

Earick, Arthur D. "Settlement and Land Use in Tuscarawas, Harrison and Carroll Counties, Ohio." University of Michigan, June 1959.* Microfilmed.

Fast, Nathan "Oyster Production and Cultch Diversion in Nineteenth Century Maryland." Johns Hopkins University, November 1959.*

Frazer, William James "Changing Patterns of Land Utilization within the Salt River Valley of Arizona." University of Michigan, June 1959.* Microfilmed.

Gallagher, James Weldon "Drought in Southern Illinois." University of Illinois, October 1959.*

Gould, Peter R. "The Development of the Transportation Pattern in Ghana." Northwestern University, December 1959.

Lamb, Robert "The Role of the Mule in Southern Agriculture." University of California, Los Angeles, January 1960.*

Michel, Aloys Arthur "The Kabul, Kunduz, and Helmand Valleys and the National Economy of Afghanistan." Columbia University, April 1959.* Published in full by National Academy of Sciences, National Research Council.

Nelson, James Gordon "The Geography of the Balsa." Johns Hopkins University, June 1959.*

Nunley, Robert Edward "The Distribution of Population in Costa Rica." University of Michigan, February 1959.* Microfilmed.

Rowan, James Elmer "Agricultural Land Utilization in the Llano Estacado of Eastern New Mexico and Western Texas." University of Nebraska, January 1960.* To be microfilmed.

Siddall, William R. "Idiographic and Nomothetic Geography: The Application of Some Ideas in the Philosophy of History and Science to Geographic Methodology." University of Washington, 1959. Microfilmed.

Sinclair, Joseph Treble "Lima, Peru: A Study in Urban Geography." University of Michigan, February 1959.* Microfilmed.

Slutsky, Herbert "An Ecological Study of Total Mortality among Guatemalan Preschool Children, with Special Emphasis on Protein Malnutrition and Kwashiorkor." University of Illinois, June 1959.*

Smith, David A. "A Geographic Analysis of Inter-Island Transportation in the Lesser Antilles and Hawaiian Islands." University of Michigan, June 1959.* Microfilmed.

Taaffe, Robert N. "Rail Transportation and the Economic Development of Soviet Central Asia." University of Chicago, March 1959. Microfilmed.

PH.D. DISSERTATIONS IN PREPARATION

Hoy, Don R. "Agricultural Land Use of Guadeloupe." University of Illinois.

Raup, Henry A. "The Delineation and Human Occupance of the Central Maine Coastal Zone." University of Illinois.

Robison, William C. "Cultural Plant Geography of the Middle Appalachians." Boston University.

Stephenson, Glenn Van "Suggested Approaches to the Organization and Teaching of Economic Geography in American Colleges and Universities." Teachers College, Columbia University. [Ed.D.]

Taylor, James Addison "The Natural and Cultural Relations of Fishing and Hunting Establishments in Northern Ontario." University of Illinois.

MASTERS' THESES COMPLETED

Anderson, Ellis A. A. "Landscape of Southwestern Alberta." University of British Columbia, October 1959.

Backes, Byron "The Ashland Area and Its Environs." University of Oregon, 1959. [M.Sc.]

Benedict, Calvert P. "A Political Geography of the United Arab Republic." University of Oklahoma, 1958.*

Buckles, James S. "Historical Geography of the Fort Rock Valley, 1900 to 1941." University of Oregon, 1959. [M.Sc.]

Byron, Joseph R. "Areal Distribution of Air Force Family Housing, Clinton-Sherman Air Force Base." University of Oklahoma, 1959.*

Chenoweth, George "Human Occupance in the SNY Island Levee Drainage District." Southern Illinois University, August 1959.*

Cook, Thomas Carlson "The Distribution of Certain Species of Exotic Eucalyptuses, Palms and Bougainvilleas in Western, Central and Southern Texas." University of Texas, August 1959.

Demko, George "The Ordill Ordnance Manufacturing Cluster: A Study in Manufacturing Geography." Southern Illinois University, August 1959.*

Edwards, Mildred M. L. "The Historical Geography of the Black Hills." University of Oklahoma, 1958.*

Emish, Barbara Yvonne "The Economic Development of Port Brownsville, Texas." Southern Methodist University, January 1960.

Fletcher, Roy J. "Potential Settlement Sites in the Central Arctic Archipelago." University of Minnesota, September 1959.*

Gibson, James R. "A Comparison of Anglo-Saxon Mennonite and Dutch Farms in the Lower Fraser River Valley: A Methodological Study in Areal Differentiation and the Relative Influences of the Physical and Cultural Environments." University of Oregon, 1959.

Gleave, Geoffrey Roger "The Central Business District of Springfield, Illinois, 1884-1959." University of Illinois, August 1959.

Healy, Jack "Mapping the Hawaiian Islands from 1778 to 1848." University of Hawaii, 1959.

Henry, Lehman L. "A Geographical Study of the Central Maunalua Region, Island of Oahu, State of Hawaii." University of Hawaii, 1959.

Holz, Robert "The Distribution and Use of Man-Made Ponds in Jackson County, Illinois." Southern Illinois University, August 1959.*

Kansky, Karel J. "Developmental Changes of Industrial Features in the Upper Si-

lesian District." University of Chicago, December 1958. Microfilmed.

Kapur, Jaginder N. "The Retail Functions of Carbondale, Illinois." Southern Illinois University, October 1959.*

Killam, Wilton Hayes "Apiculture in Texas." University of Texas, August 1958.

Kott, Richard F. "The Sequent Occupance of Tinker Air Force Base: A Case Study." University of Oklahoma, 1959.*

Malik, Rashid A. "Agricultural Occupance of West Punjab." University of Chicago, August 1958. Microfilmed. [M.Sc.]

Marlow, Loran "Physical Characteristics of the Snow Creek Watershed and Their Relation to Agricultural Land Use." Southern Illinois University, August 1959.*

McDevitt, Thomas "A Geographic Analysis of Professional Baseball Within the United States, 1930-1935." Southern Illinois University, June 1959.*

Mitchell, Glenn A. Jr. "The Geography of Nueces County, Texas." University of Texas, August 1959.

Nelson, Ronald E. "Public Water in Suburban Southern Illinois." Southern Illinois University, August 1959.*

Norsworthy, Stanley Frank "Hueston Woods: An Ohio State Park." Miami University, Ohio, August 1959.

Okeson, Leroy "The Functional Structure of Metropolis, Illinois." Southern Illinois University, August 1959.*

Peplies, Robert W. "Vacant Land in Athens, Georgia: Its Distribution and Causes." University of Georgia, 1959.*

Pile, Elsie "Expansion of the Lexington Urban Area into the Rural Area of the Inner Bluegrass, 1950-1958." University of Kentucky, June 1959.

Pinkerton, Robert "Water Control and Land Use in the Degonia and Fountain Bluff Drainage and Levee District (Jackson County, Illinois)." Southern Illinois University, August 1959.*

Rampon, William J. "The Historical Geography of Swissvale, Pennsylvania." University of Oklahoma, 1959.*

Reed, Benjamin V. "Commercial Land Use in Fairfax County, Virginia." The George Washington University, 1959.

Roscoe, Richard P. "Con Sal y Limon: A Survey of the Tequila Industry in Jalisco." University of Chicago, December 1958. Microfilmed.

Schretter, Howard A. "Circular Corporate Limits in the United States: Their Origin, Distribution, and Implications." University of Georgia, 1959.*

Schwartz, Carroll "Distribution of the Foreign-Born Population of Illinois." Southern Illinois University, August 1959.*

Shah, Ahmed Javed "Waterlogging and Salinization of Soils in West Pakistan, with Special Reference to Lahore Division." Miami University, Ohio, February 1959.

Wilson, LaRona McDonald "The Differential Development Among Anglos and Mexicans in the Mormon Colonies of Northwest Mexico." Ohio State University, December 1959.

Leslie Hewes
University of Nebraska

SOME RECENT TRENDS IN FRENCH GEOGRAPHIC RESEARCH AND THOUGHT

From the time of Elisee Reclus and Vidal de la Blache the French school of regional geography has trained generations of brilliant, productive geographers and has at the same time exerted a salutary influence on writers in many disciplines. French geographers were so few in number, however, that almost all of them up to 1914 were professionally occupied in France, or in French colonies or spheres of influence. The result was a series of brilliant analytical and descriptive works on Indochina, the Near East, North Africa, French Tropical Africa, and the French Antilles. Between the wars French geographers began to pay more attention to the Americas, particularly to Latin America. To cite but two, Pierre Monbeig spent over a decade in Brazil and

wrote his classic work on *Pionniers et Planteurs de Sao Paulo* (A. Colin, Paris, 1952); and Pierre Deffontaines published his analysis of the raison d'etre of Rio de Janeiro ("Rio de Janeiro, une grande victoire urbaine," *Revue D'Economie Politique*, Paris, 1939, pp. 92-109) and his *Geografia do Brasil* (Rio de Janeiro, 1940). A study of some outstanding post-war works, in which problems of Eurasia and Africa are dealt with, reveals recent trends and orientations in French geographic thought and writing.

Significant studies in the various parts of the world which fly the French flag are being carried out under the auspices of the office of La Recherche Scientifique et Technique Outre-Mer. In order to increase agricultural production in some densely populated areas, or to make land in sparsely inhabited sectors available to settlers, it is extremely helpful to know what the native concepts of landholding are, and the persons or entities presumed to own or control the land or its products. Vague boundary lines are a problem in many parts of the world, as for example in Dahomey. Items of seemingly small importance may loom large indeed. Confusion may be worse confounded, for instance, when the land registration office is unaware of the fact that the same man may be known under different names in the course of his life, depending on the stage of his religious development (L'Homme D'outre Mer, No. 2, *Societe Paysanne Problemes et Fonciers de la Palmeraie Dahomeenne*, Paris, 1956, 147 pp.).

Over the years since 1930 Professor Jean Despois has greatly enlarged and enriched the geographic literature on French North Africa, based on intensive field investigations carried out there over the decades. His recent work, *Le Djebei Amour Algerie* (Presses Universitaires de France, 1959, 130 pp.) is an historico-geographic analysis of the Djebei Amour massif and its people. The massif is the physical and cultural center of this *pays* or region; the Amour tribes are mountain pastoralists rather than Saharan, and most of their relations are with the massif to which they belong. He states that over the past century there has been a marked trend toward sedentarization among these people, that is, living in houses rather than inhabiting the black tents of the nomads. He further states that the Hydraulic Service has concentrated most of its efforts on the more efficient use of water, the principal capital of the region, in order to increase production in agriculture and in animal husbandry; and that the Service for Rural Amelioration has made available dipping tanks for stock, has provided seed rams to pastoralists, and has waged a battle against overgrazing.

Professor Guy Lasserre of the University of Bordeaux, in *Libreville: La Ville et Sa Region* (Paris, 1958, 347 pp.), finds that the African urban milieu in general, which is rich in socio-geographic problems arising from the contact of two profoundly dissimilar civilizations, is upsetting the equilibrium of traditional rural Africa. The youth of the population, the large number of men compared to women, the fluidity of family and social structures, the breakdown of old norms and social controls, and the rampant poverty – all, unfortunately, are characteristic of many towns south of the Sahara. Professor Lasserre has also lived in the French Antilles and is analyzing conditions there, the results of which will appear in forthcoming papers.

Eugene Revert's posthumous volume, *Le Monde Caraibe*, gives an excellent bird's-eye view of the American Mediterranean. In an earlier work ("Les transformations economiques et sociales a la Martinique depuis la guerre," *Livre Jubilaire Offert a Maurice Zimmermann*, Lyon, 1949, pp. 273-277) he showed that not all was "rum and skittles" when the heavy metropolitan administrative machinery was transferred to the French Antilles, consequent upon integration with the mother country. Unexpected difficulties arose. Higher wages often are reflected in a higher incidence of absenteeism on the part of workers. Local foodstuffs, especially root plants, are grown less and less because they can no longer compete with imported rice, flour, and beans. Large landholders, mostly Creoles, control the 13 sugar mills and most of the distilleries and thus dominate the island economy. The author feels that an agrarian reform is indicated if the ancient, dominantly Creole society is to be modernized.

Professor Pierre Gourou, of the College de France and the Universite Libre de Brussels, has used his vast Old World investigations as a background for studies in Latin

America. On the basis of his many years in the tropics of Africa, America, and Asia, and especially of his prolonged studies in the Far East, he was able to make brilliant generalizations and correlations with the African and American tropics in *Les Pays Tropicaux: Principes de Geographie Humaine et Economique*, Paris, 1946. In *La Terre et l'Homme en Extreme-Orient* (Armand Colin, Paris, 1952, 224 pp.), the Far Eastern peasant is portrayed as in general living in, or on the edge of, misery. Although the volume of production has been low for millennia, life in so many ways is complex by virtue of the number and nature of operations performed in making a living. However, the great majority of peasants belong to a village, a political unit little affected by outside influences, where the individual is to a certain extent a free citizen even if in a restricted orbit, somewhat like the community Indian of Andean America. The author feels that present political upheavals will not destroy the union of man and land that made possible the longevity of Far Eastern civilization and which will save it from destruction.

Professor Gourou's unusual insight into the problems of the Far East is admirably shown in his well documented *L'Asie*, first published in 1953 (Hachette, Paris), and followed by a new and beautifully illustrated revised edition in 1959. Chapter V, on nutrition and human geography, is one of the most thought provoking. He states that in the Far East in general the caloric intake per person per day all too often averages below 2,000, instead of the 2,800 to 3,000 considered to be a good average in the Occident. These statistics make clear the stark reality, viz., that the less food people consume the greater the number of people who can live in a given region. The problems of education, of public health, of the improvement of agricultural and industrial techniques, of the extremely high birth rate, and so on, are discussed with that clarity and sense of reality for which French writers long have been justly renowned. The author feels that the old and brilliant civilizations of the East have survived for so long that they must contain intrinsic, perhaps universal, values, and hence should be able to adopt modern techniques without necessarily abandoning these values in toto in order to accept those of the West. The patience of the Chinese, the objectivity of the Indians, and the solidarity of the Moslems will certainly be important factors in creating the cultural climate of the world that is emerging.

Professor Gourou is now writing a geography of tropical Africa, to be followed by a work on the American tropics. He has already published a penetrating study on malaria and geography in Brazil ("Paludisme et Geographie au Bresil," *Livre Jubilaire Offert a Maurice Zimmermann*, Lyon, 1949, pp. 193-204). The Amazon Basin is shown to be another example of the difficulty of trying to eradicate malaria in sparsely populated areas. At the same time, for instance, that the Middle West of the United States was being permanently settled the reservoir of malaria was being destroyed. West of Sao Paulo, the settlement pattern has been largely influenced by the malarial mosquito; people have settled the malaria-free plateaus and shunned the malarial valleys. He also suggests that the effects of the anti-malarial campaign in the Baixada Fluminense (1933-1944) may not be lasting because a vigorous settlement program was not carried forward at the same time.

Two French investigators, Francois Chevalier and Louis Huguet ("Peuplement et Mise en Valeur du Tropique Mexicain," *Miscellanea Paul Rivet*, Mexico, 1959, pp. 395-438), have just published a penetrating study of tropical Mexico that is somewhat of an antidote to C. Levi-Strauss' *Tristes Tropiques*. The Mexican government is engaged in a broad program of regional development for its tropical areas. Public health measures are being introduced, education is being supported, roads, railroads, and airstrips are being built, and modern mechanized equipment is being used on a large scale. One is justified in being optimistic, "particularly in Mexico where the tropical soils are good, where the government is intelligently and efficiently dealing with the problem, and where a young population, increasing with extreme rapidity, is looking toward these virgin soils full of promise for supplementary resources and new markets" (p. 438).

Raymond E. Crist
University of Florida

INTERNATIONAL SUMMER SCHOOL

UNIVERSITY OF OSLO

The International Summer School held each summer at the Blindern campus of the University of Oslo affords many attractions for English-speaking geographers interested in Scandinavian culture. With the International Geographical Congress being held in Stockholm during the coming summer, geographers and students who are attending the meetings should explore the possibilities offered by the International Summer School's varied courses of instruction as well as planned and unplanned field trips.

The curriculum is particularly valuable for the human geographer, who must draw upon other disciplines to understand his craft. Aside from the obvious benefits derived from the study of the Norwegian language, geographers will find value in courses such as the History of Norway, Social and Political Institutions of Norway, International Relations from the Norwegian and Scandinavian Viewpoints, Norwegian Economic Life and Problems, Human Geography of Norway, and the graduate course in Norwegian Society. The over-all program of the school is integrated through a basic course on Norwegian culture required of all participants. This course provides a broad survey of Norwegian life, the lectures being given by some of the more prominent leaders and educators of the country.

For those specifically interested in economic geography or the geography of manufacturing, the Summer School, in conjunction with the Norwegian School of Economics and Business Administration of Bergen, sponsors a six credit seminar on the Industries of Norway. The initial part of the course consists of two and one-half weeks of lectures at the Blindern campus, with short field trips in and about the Oslofjord region. This orientation is followed by a three-week, 2,500 mile, field trip to industrial plants throughout Norway. The session concludes with a two-day summary in Oslo.

For those wishing to see Norway, the Summer School arranges at least two well-planned two and one-half day field trips. These trips include visits to the Cambro-Silurian lake district of eastern Norway and to the wilderness of Telemark. The Summer School also sponsors an optional fjord voyage, taken during the mid-term "rest" period, and a longer post-session fjord tour. Oslo, the hub of Norwegian communication facilities, is a convenient point of departure for those interested in impromptu or unguided field trips.

Students and instructors of geography will receive considerable benefit from the program of Oslo's English-speaking International Summer School. Foreign geographers have long availed themselves of its resources, and more American students of geography should realize the advantages offered by the school. Catalogs and additional material may be secured by writing directly to Mrs. Lorraine Carlson, Registrar, St. Olaf College, Northfield, Minnesota. Persons living outside North America should correspond directly with the Summer School Administrative Office, University of Oslo, Oslo, Norway.

Vincent P. Miller
College of Wooster

NEWS FROM GEOGRAPHIC CENTERS

CINCINNATI, UNIVERSITY OF

The appointment of Dr. Hans H. Carol as Associate Professor of Geography, effective September, 1960, has been announced by Professor Peter H. Nash, head of the newly created Geography (Regional Science and Land Planning) Department at the University of Cincinnati. Professor Carol, on leave from the University of Zurich, Switzerland, has been visiting professor at the Graduate School of Geography at Clark University during the past two years. In his new post, Dr. Carol will give courses

in land utilization and planning, methodology, and Africa.

The Department will expand its "action-oriented" offerings, and several new courses will be added leading towards the M.A. and Ph.D. degrees in geography. Two new graduate assistantships have been established. Under the direction of Professor Nash, the Department is engaged in contract work with ACTION (American Council to Improve Our Neighborhoods) in a pilot project involving the total housing and land use situation in the Cincinnati Standard Metropolitan Area. Several faculty and students from other university departments also are participating.

Professor Coulter is continuing his research on French possessions in the Pacific, and Professor Hodgkins is summarizing his analysis on nonrenewable energy resources of the USSR. Professor Wolf is undertaking an examination of population distributions and densities in Ohio. Mr. Sanders is continuing his analysis of the location of industrial plants in the metropolitan area, with special reference to their relation to traffic and housing problems.

OREGON STATE COLLEGE

The Department of Natural Resources has made the following Graduate Assistant appointments for the 1959-60 year. Mr. Eugene Ellis is serving as research assistant to Dr. Highsmith and will be a cadet instructor in the spring term. Mr. Dale Newland is laboratory assistant for physical geography. Mr. Gerald Young is graduate assistant for cartography. Mr. Conrad Wicht is assisting Dr. Heintzelman as reader for introductory geography. Dr. Duane Altig from Portland State College is serving as assistant for the television geography broadcast from the Eugene campus. In addition Mr. James Jack, a Ph.D. candidate, is serving as part-time instructor for introductory geography.

The entire faculty is now in residence. Dr. O. H. Heintzelman returned from a year of field study in Europe. At a recent geography dinner meeting he gave a report on his travels. At present he is engaged in writing several reports based on field studies carried out during his year of leave. During the spring and summer of 1960 Dr. Highsmith will be on sabbatical leave in order to carry out field study in the American South.

The Department will offer a special 8-week summer session study in 1960. The Natural Resources Institute will begin June 20 and continue until August 12. The purpose will be to provide an opportunity for teachers of all levels to up-grade subject matter knowledge in the fields of resource geography, physical geography and conservation. The resident faculty will be J. Granville Jenson, Oliver H. Heintzelman, and Robert D. Rudd.

OTHER ITEMS

ASSOCIATION FOR LATIN AMERICAN STUDIES

The Association for Latin American Studies was organized at Sagamore, New York, at a conference held August 26-29, 1959. The conference was attended by 35 persons, including academic scholars selected for their standing in the field of Latin American studies and representatives of learned societies.

The members of the Sagamore Conference agreed to establish a national organization to promote Latin American studies in all fields of knowledge. The national body will cooperate with other scholarly agencies in the Latin American field, including the regional councils already in existence and those that may later be set up. It is not intended that the national organization shall in any way limit the activities or programs of other interested groups; on the contrary the national organization will encourage and aid regional programs whenever this is appropriate and feasible. It will encourage the holding of special sessions dealing with Latin American problems at the annual meetings of each of the disciplines, hold conferences organized on an inter-disciplinary basis to discuss specific research problems or programs, and lend support to the regional councils in establishing inter-disciplinary seminars and

conferences to which scholars outside of the region may be invited. A most important responsibility will be the publication of a news letter, similar to the former *Notes on Latin American Studies,* which will circulate not only in the United States but also throughout Latin America.

The Association is to be made up of individual and institutional memberships. There shall also be a few honorary members, and a large number of corresponding members, selected from among scholars outside of the United States. It was agreed that the following dues will be charged initially: individual members, $3.00; student members, $1.00; institutional membership, minimum of $25.00.

The following interim executive committee was appointed: Preston E. James of Syracuse University, chairman; A. Curtis Wilgus of the University of Florida; Robert Wauchope of Tulane University; Harvey L. Johnson of Indiana University, secretary-treasurer. Applications for membership may be obtained from the last-named individual at the Department of Spanish and Portuguese, Box 70, Indiana University, Bloomington, Indiana.

Plans for Global Measurement of Radioactive Hydrogen in Water

A panel of experts met at the International Atomic Energy Agency's headquarters in Vienna during December, 1959 to discuss detailed plans for a world-wide project to measure tritium concentrations in water.

Tritium (hydrogen-3) is the radioactive isotope of hydrogen, and measurements of its varying concentrations in samples of water taken from different parts of the earth can be of considerable value in studying the circulation of water in nature. The results of such a study might very well have an important bearing on plans for the disposal of radioactive wastes on land and in the sea as well as on irrigation plans in arid or semi-arid regions.

A tritium survey on a global scale will provide information on ground water resources, on rates of ground water flow, and on the rate of mixing of water in lakes and between the sea surface and deeper layers of the sea. For example, by comparing the tritium concentration of inflowing water with that of outflowing water, the average age of the water in a lake can be deduced. Again, tritium measurements can yield valuable information on the age and size of ground water and determine the storage time and flow rate of such water for the drainage system of a river or of a whole continent.

Chicago Teaching Positions

Professor C. W. Dierickx, Chicago Teachers College, informs us of the fact that the Chicago Board of Education has established geography as a regular part of the curriculum in the secondary school system. To determine the number of geography teachers needed is difficult for such a new project, but it seems likely that at least 100 full-time teachers of geography will be needed within the next year or two.

The minimum starting salary (with a B.A. and no teaching experience) is $5,000 with annual increments of $250 a year for 10 years. For a master's degree the starting salary is $5,500; for a master's plus 36 credit hours, it is $6,000; and for a Ph.D. with no teaching experience the starting salary is $6,500. For example, at the end of ten years a B.A. would be making $7,250 and various other ranks proportionately higher.

The requirements for these teaching positions are: A candidate taking the geography examination must present 32 semester hours of college credit in geography and related fields. A minimum of eight semester hours must be in *Physical Geography:* elements of geography, physical geography, oceanography, geology (basic processes, not historical), meteorology, climatology, cartography, or map and air photo interpretation; eight semester hours in *Regional Geography* covering major parts of the earth's surface, e.g., Caribbean, Eastern United States, Europe, British Isles; and eight semester hours in *Topical Human Geography*: economic geography, global geography, social geography, transportation geography, urban geography, or conservation. The balance of the 32 hours may be in any geography the candidate may elect to submit or may be from related fields in courses approved by the Board of Examiners. In addition the student needs a minimum of 15 credit

hours in education and must pass a certifying examination in geography.

The next examination will be given in Chicago on April 25, and the last day for applications is April 11. Applications to take this examination should be directed to: Board of Examiners, Board of Education, 228 North LaSalle Street, Chicago, Illinois.

REGISTER FOR FOREIGN LECTURES

The International Educational Exchange Service of the Department of State is interested in bringing to the attention of American Foreign Offices abroad the availability of artists and scholars who may be travelling on leave and who are willing to give lectures in their fields of specialization. Registration implies no obligation either on the part of the registrant or the government. It is merely a source list from which speakers may be selected to help develop an awareness of American scholarship within foreign countries should the opportunities for lectures arise. Financial arrangements are suited to individual cases. Preference will be given to those proficient in the language of the country concerned, and periods of sojourn other than summer months will have less competition.

Any geographer interested in being so registered should send his name to the AAG Central Office at 1785 Massachusetts Ave., N.W., Washington 6, D.C., listing countries to be visited and topics of possible lectures. The various aspects of American life are preferred.

SOVIET UNION TOUR

The Geographers' Tour of the Soviet Union, proposed in the November *Professional Geographer*, has matured into a definite itinerary for the period August 18 to September 10, 1960, based on Moscow and including Minsk, Kiev, Odessa, Yalta, Rostov/Don, Stalingrad, Tbilisi, Baku, Tashkent, Samarkand, Stalinabad, and Alma Ata. Highlights of the tour are a boat trip through the Volga-Don Canal and a bus trip through the Caucasus. The all-inclusive cost, based upon a group of at least 15, is $989.

The basic itinerary is designed to meet the needs of those planning to attend the Orientalists' Congress in Moscow as well as the Stockholm Congress. Supplementary itineraries provide for visits to Helsinki, Leningrad, and Moscow in the period August 13-17. Transatlantic air accommodations (SAS jet, economy class) are available for participants leaving New York on August 4, and returning to New York on September 10. Further details and applications may be obtained from Aloys A. Michel, Department of Geography, Yale University, New Haven, Conn.

Dr. Robert O. Johnsrud, a member of the AAG, died on Sunday, January 10, 1960. He was an assistant professor of geography at Northwestern University. He had completed his Ph.D. at the University of Wisconsin in 1958. In 1956 he joined the staff of Wayne State University for a period of two and one-half years. During most of the last year he was doing research in northern Nigeria under the Foreign Area Field Program, NAS-NRC. He was born on July 28, 1930. He is survived by his wife, Judith Hayes Johnsrud.

COMMUNICATIONS FROM READERS

THE 1960 CENSUS

Dear Editor:

I should like to call attention to an excellent article on plans for the 1960 census by Paul C. Glick, entitled "Plans for the 1960 Census of Population" (*Population Index*, Vol. 25, October, 1959, pp. 289-301). It contains a comprehensive summary of the pretest program, schedule content, basic and sample items, innovations in enumeration and tabulation procedures, and publication proposals. Although the big count will be made April first, and field work will continue until July 15, a great deal of work has already been completed. The pretest program is finished. Decisions about schedule items, field work, and tabulating procedures have been made. As a result of the use of electronic and automatic equipment in processing schedules, the five series of reports should begin to appear in November, 1960. Except for special monographs, the entire 1960 census should be published within three years.

As major consumers of census data, geographers will appreciate the many innovations designed to produce more reliable data. A uniform sample size (25%) for all sample items and increased cross-classification of data comprise improvements. Questions concerning the journey to work are among the very few items added to the 1960 census. Citizenship and the much maligned rural non-farm residence category are among the more numerous items dropped. A number of concepts have been sharpened, elaborated, or otherwise changed, including definitions of age, dwelling unit, education, farm residence, and employment status. The size of the headache induced by non-comparability of 1960 with 1950 data will depend upon one's interests.

Two organizations, the Social Science Research Council and the American Public Health Association, are already planning, in cooperation with the Bureau of the Census, a series of monographs to ensure maximum use of the 1960 census. It may be that the Association of American Geographers should do likewise within the framework of our monograph series already under way. Irrespective of any action on monographs, I would like to see the Association establish immediately a Committee on the 1970 Census to cooperate with the Bureau of the Census on two problems of areal delimitation.

If funds had been available, the Bureau of the Census could have established urbanized areas for cities with 25,000 to 50,000 population and could have identified unincorporated villages in a specified size category under 1,000 inhabitants. During 1960-1968 the geographic profession ought to be able to develop improved delimitation techniques. In 1969 it might even recruit and direct a labor force consisting of geography students, fourth grade through graduate school, to do the job. No census users would benefit more from an extension of urbanized areas to smaller cities and from the identification of unincorporated villages than geographers.

Mary Alice Ericson
Columbia University

MAP COLLECTIONS: ANOTHER APPROACH

Dear Editor:

In May, 1958, *The Professional Geographer* published an article by Howard G. Roepke on "Care and Development of a Wall-Map Collection" in which he describes procedures developed and followed at the University of Illinois. Mr. Roepke and the department at the University of Illinois are to be commended for their approach to the problem, and the ideas presented in the article are excellent. However, I have the temerity to suggest an alternative solution to the storage problem.

At the University of Oklahoma, when geography moved to new quarters in 1951, Professors Morris and Olson, with the assistance of the University carpentry shop, developed a unique and superior type of case for the storage of wall maps. The case, built to specifications partly dictated by room size, is 18 feet long, 4 feet deep, and 10 feet high. The case houses 42 vertical drawers, which ride on rollers on the floor and are guided by a tongue and groove arrangement at the top of the cabinet. Each drawer is fitted with 12 hooks, and a screw eye is mounted in the end of each wall map. The original investment in this case was more than $800, but it is a beautiful piece of furniture which houses more than 500 wall maps. The departmental collection has outgrown the case as the number of maps has greatly expanded, and a few maps are too long to handle within the drawers. These shortcomings are not inherent in the nature of the case, but are a product of small room size. Budgets permitting, another similar case probably will be constructed within the wall map room in the not too distant future.

Significant advantages of such a system include easy accessibility, dust protection, and an attractive appearance. Index cards are mounted on the outside of each drawer, and each map is described in sufficient detail to give the potential user a good insight as to the character of the map before he inspects and uses it. The maps are arranged in the drawer regionally; and, within regions, maps are alphabetized. An index is maintained, but five minutes familiarization with the system practically precludes the necessity for consultation of the index. Of course the hooks within drawers are numbered, and these correspond to index card numbers appearing on the outside of each drawer. Each map is identified by painted ends and/or penciled markings on the back side of the roll map. Check-out procedures for the collection should follow some standardized procedure, since maps have a way of "walking off" assisted by our absent-minded colleagues in other fields.

Arthur H. Doerr
University of Oklahoma

PERSPECTIVE ON THE NATURE OF GEOGRAPHY

Richard Hartshorne

201 pp., $5.00, 1959
Rand McNally and Company
P.O. Box 7600, Chicago 80, Ill.

NEW PUBLICATIONS

Aerial Photo-Interpretation of Landforms and Rural Cultural Features in Glaciated and Coastal Regions. W. E. POWERS AND C. E. KOHN. Northwestern University Studies in Geography, Number 3. Northwestern University Press. Evanston, Ill. 1959. viii and 111 pp. illust. $3.75.

Some day a comprehensive college textbook on the principles and applications of aerial photo-interpretation will be written by a geographer and for use by geographers in the classroom. Until such time, more limited studies such as the above will serve as welcome geographic supplements to the available textbooks on photo-interpretation written by geologists, engineers, foresters, and the like.

This lithographed, paper-covered book is divided into three parts. Part I is concerned with the identification on aerial photos of selected landform features: specifically, landform types developed by continental glaciation (Chapter 1), shoreline features associated with glaciation (Chapter 2), and landform types in a dry grassland marginal to glaciated plains (Chapter 3). Part II deals with the identification of selected cultural features on aerial photos, including farm crops (Chapter 4) and rural and seaside resort settlement features (Chapter 5). Part III (Chapter 6) presents the authors' concept of a geographic system of photographic analysis, based on the interrelated association of observable natural and cultural landscape features.

As one might expect because of its subject matter, the study is replete with halftone illustrations. These comprise more than half of the pages. Many of the photographs, unfortunately, have lost some of their original sharpness and contrast in reproduction. A majority of the photos consists of annotated aerial stereograms and related ground stereopairs, which are employed by the authors to illustrate principles contained in the text. The use of a lens stereoscope is a necessity to properly benefit from such photographs.

Despite the limitations imposed by restricted topical coverage, this study represents a laudable step forward toward the ultimate goal of a geographer's handbook of photo-interpretation. Additional, complementary, studies would be welcomed by the geographic profession.

GEORGE F. DEASY
The Pennsylvania State University

Atlas of Pennsylvania Coal and Coal Mining: Part I, Bituminous Coal. G. F. DEASY AND P. R. GRIESS. Bulletin of the Mineral Industries Experiment Station, Number 73. Mineral Conservation Series. College of Mineral Industries. The Pennsylvania State University. University Park, Pa. December 1959. v and 68 pp. plus fold-in map. $1.00.

This paper-backed atlas brings together selected data on Pennsylvania's bituminous coal resources and coal mining industry and presents them in graphic form. Included are maps dealing with geological, historical, engineering, economic, production, employment, safety, and transportation facets of the subject. The atlas is designed to be of interest and use to educators, conservationists, coal mining companies, research and planning organizations, coal users, coal unions, and to federal, state, county, and local governmental agencies.

The approximately 100 maps, most of which are drawn to scales of 32 or 50 miles to the inch, are arranged in six groups. Introductory maps represent Pennsylvania's relative position among states in the mineral and coal mining industries of the United States. A second group of maps deals with Pennsylvania's bituminous coal fields as well as selected coal seams within those fields, and a third group analyzes the composition and heat value of the state's bituminous coal. The fourth group of maps is devoted to employment and labor factors in the bituminous industry, and the fifth is concerned with mines, mining methods, and

accidents. A final group represents the production and shipment of coal from the state's coal fields.

The authors plan to prepare a companion volume to the above atlas that will deal with anthracite coal in Pennsylvania.

China: Provisional Atlas of Communist Administrative Units. Central Intelligence Agency. Washington, D.C. 1959. 51 pp. $5.00.

This atlas of administrative units of Communist China was prepared to aid researchers working with current problems of that country. There are 25 maps, some in color, which represent large-scale reproductions of maps appearing originally in *The Provisional Atlas of China,* a pocket-size volume published in Communist China in late 1956 for use in schools and offices.

The maps show place names, hsien (county) seats, and some hydrography and roads. Marginal lists give administrative structure for each of the province-level units. The maps are current to August 1958.

The volume also contains instructions for use, explanation of the administrative structure of Red China, a key to the new "Pinyin" system of romanization, and an index of administrative names by first and second syllable.

The atlas may be purchased from the Office of Technical Services, Business and Defense Services Administration, U.S. Department of Commerce, Washington 25, D.C.

A Descriptive Atlas of New Zealand. A. H. McLINTOCK, ed. R. E. Owen, Government Printer. Wellington, N.Z. 1959. xxi and 109 pp. $6.00.

Prime Minister Walter Nash of New Zealand states in the foreword of this volume that it "brings to completion plans formed over many years for the publication of a descriptive national atlas." The project was carried out under an advisory committee consisting of representatives of several government departments and a representative of the New Zealand Geographical Society. The editor is the Parliamentary Historian.

A wealth of information is brought together and summarized in the atlas. It contains four main parts: text, photographs, maps, and a gazetteer. The text, comprising nearly half of the volume, consists of 28 sections dealing with the development, natural features, and resources of New Zealand. Most of the articles are written by government specialists, but several members of university departments contributed to the work. The subjects range from pre-European settlement to tourism in New Zealand. Line drawings, maps, graphs, and diagrams illustrate the text, which is conveniently indexed.

Twenty-five oblique aerial photographs are reproduced as full-page illustrations. The photographs, all of which are analyzed, are carefully selected to depict characteristics of the New Zealand landscape.

About a quarter of the pages in the volume are devoted to maps printed in color. Of special interest to geographers are the special-purpose maps of New Zealand dealing with topics such as climate, geology, soils, vegetation, population, land utilization, and manufacturing. A physical map of the Dominion in seven parts (scale 1:1 million), and the larger scale maps of urban areas, permit more detailed examination of particular features. The maps, which are the work of government cartographers, are elegant in design and well printed.

This handsome and informative volume represents a notable addition to the growing family of national atlases.

NORMAN J. W. THROWER
University of California at Los Angeles

Environmental Conservation. RAYMOND F. DASMANN. John Wiley and Sons, Inc. New York. 1959. x and 307 pp. illust. $6.50.

This book appears to be a unique treatise on conservation, in that it employs an ecological approach to the importance of proper use of natural resources. It shows what can be achieved in terms of economic wealth by scientific use and conservation of natural resources. The book is an excellent text in the fundamentals of conservation.

THOMAS A. CLARK
The Agricultural and Technical College of North Carolina

Handbook: A Technique for Preparing Desert Terrain Analogs. Technical Report No. 3-506. U.S. Army Engineer Waterways Experiment Station, Corps of Engineers. Vicksburg, Miss. 1959. vii and 70 pp. plus 20 pp. appendices. illust.

This book describes the semi-quantitative techniques that were developed for, and employed in, four associated predecessor reports entitled *Analogs of Yuma Terrain in the Northeast African [Northwest African, South Central Asian, Mexican] Desert,* and which will be used subsequently in five additional reports dealing with terrain conditions in remaining desert areas of the world. The two major sections of the book under review deal with mapping units and mapping methods. More than half the physical bulk of the study is made up of 19 multi-page, multi-color maps that were originally published in the Northeast African report. These maps serve as illustrations of the described techniques.

Since the days of World War II the subject of military geography has become increasingly complex, and perhaps justifiably so; but it appears to the reviewer that this study represents some sort of quintessence of complexity. The utility of maps requiring legends with 68 letter-symbols (Plate 5, "Selected Landforms and Surface Conditions"), and 38 color-symbols plus an additional almost infinite possible variety of combination symbols (Plate 11, "Generalized Landscape"), certainly is subject to question. In fact, the very need for this book is a commentary on the intricacy of the maps.

GEORGE F. DEASY
The Pennsylvania State University

Mountains in the Sea: The Story of the Gough Island Expedition. MARTIN HOLDGATE. St Martin's Press. New York. 1958. xvi and 222 pp. illust. $5.50.

This is a pleasant anecdotal account of an expedition to Gough Island, to the south of Tristan da Cunha, in the south Atlantic. The expedition members were young Britishers intent on visiting a remote area and carrying out scientific work. Their choice was an interesting one, and this popular account of their trip is a very readable one.

The expedition had to lay over for some time at Tristan da Cunha. This is fully reported. For the human geographer this supplies a good deal of material on the ways of life and the problems faced on an extremely isolated piece of land by a small and mostly self-sufficient population that is by now inbred. Deforestation, extinction of native animal populations, overgrazing, shifts in sea routes and attendant isolation, and restoration of some contacts through modern fishery techniques are some of the types of situations well described.

At Gough Island there were no inhabitants. Occasional visitors had not greatly disturbed the island fauna or flora. The extensive seal hunting of the nineteenth century had depleted the fur seals, but they are now re-established. The myriads of sea birds give a picture of what oceanic islands were like before the advent of rats, cats, and men. Besides naturalistic observations the major activity of the expedition was the making of an accurate map of the island. Geology, botany, and zoology are not reported in detail.

This is an enjoyable popular account with a considerable amount of factual information on these remote islands, and provides a good deal of useful insights into the whole problem of expeditions.

GEORGE F. CARTER
The Johns Hopkins University

Natural Selection and Heredity. P. M. SHEPPARD. Philosophical Library. New York. 1959. 212 pp. $6.00.

World-wide interest in the centennial of the appearance of Darwin's book *On the Origin of Species* has produced a spate of publications dealing with the man and his work. One of the superior studies is Sheppard's book, cited above, which deals with some recent theories on the mechanism of evolution in the light of modern genetics.

Among the major topics selected for chapter treatment in the book are polymorphism, stable polymorphism, polygenic inheritance and selection, recombination, mutation and genetic drift, the evolution of dominance, protective coloration, mimicry, and ecological genetics. The author, a member of the

Department of Zoology at Liverpool University, has the happy faculty of expressing complex concepts in language understandable by the layman, especially in his introductory chapters dealing with the elementary principles of heredity.

The geographer's primary interest in the book is not so much in the main stream of its story but instead in its eddies and cross currents, among which are numerous examples of the adaptation of animal life to various environments.

Philips' Modern College Atlas for Africa. HAROLD FULLARD, ed. George Philip and Son Ltd. London. United States source: Denoyer-Geppert Co., Chicago. 1959. 136 pp. plus 32 pp. index. $3.75.

This atlas contains an impressive array of maps on Africa, 40 pages being devoted to that continent. The majority are sectional maps, many of which occupy an entire page or in some instances two pages. A variety of physical and cultural conditions are mapped, including such items as temperatures, precipitation, pressure, winds, landforms, soils, geology, natural vegetation, distribution and types of people, communications, and economic activities. In addition to the African maps, there is a group of world maps depicting various environmental and cultural conditions, and production of major commodities. There also is a series of maps on continents other than Africa, in some instances almost as comprehensive as those on Africa. Two pages are devoted to maps of the heavens and the polar regions. Relief-like colored physical maps of the world comprise the end papers. The color schemes on the maps are striking but not garish. Even on the smaller maps, the colors and resulting patterns are distinctive.

At the beginning of the atlas there are six pages of climatic graphs giving temperature and precipitation data for selected stations on each continent except Antarctica. Each page contains 18 graphs, together with a map giving the locations of the stations. A comprehensive index concludes the atlas.

The wealth of material contained in this excellent atlas should make it useful to all geographers. It would appear to the reviewer that the only defect of this atlas is the modesty of its title, since so many of its pages deal with non-African areas.

United States. Aero Service Corporation. Philadelphia. 1959. Map. 28 x 18 in. 117 mi. to the in. In color. $9.95.

World. Aero Service Corporation. Philadelphia. 1959. Map. 28 x 18 in. 962 mi. to the in. In color. $9.95.

Both of these are relief-type plastic maps in eight colors. The 50-state United States map shows 4,000 geographic names, including 2,000 cities and towns, 1,000 lakes and rivers, over 200 mountain ranges and peaks, and other features. The world map features 2,500 place names, including 1,200 cities and towns, 400 large water bodies, 450 islands, mountain ranges, and peaks, plus other features. Both maps are framed with mahogany colored plastic.

ADDENDUM:

The Economic Development of the Western Montana of Central Peru as Related to Transportation by WOLFRAM U. DREWES, which was announced under "New Publications" in the March, 1959 issue of *The Professional Geographer,* is now available at the same price of $2.00 from the Society for International Development, 1145 19th St. N.W., Washington, D.C. rather than from the *Peruvian Times* office in Lima, Peru.